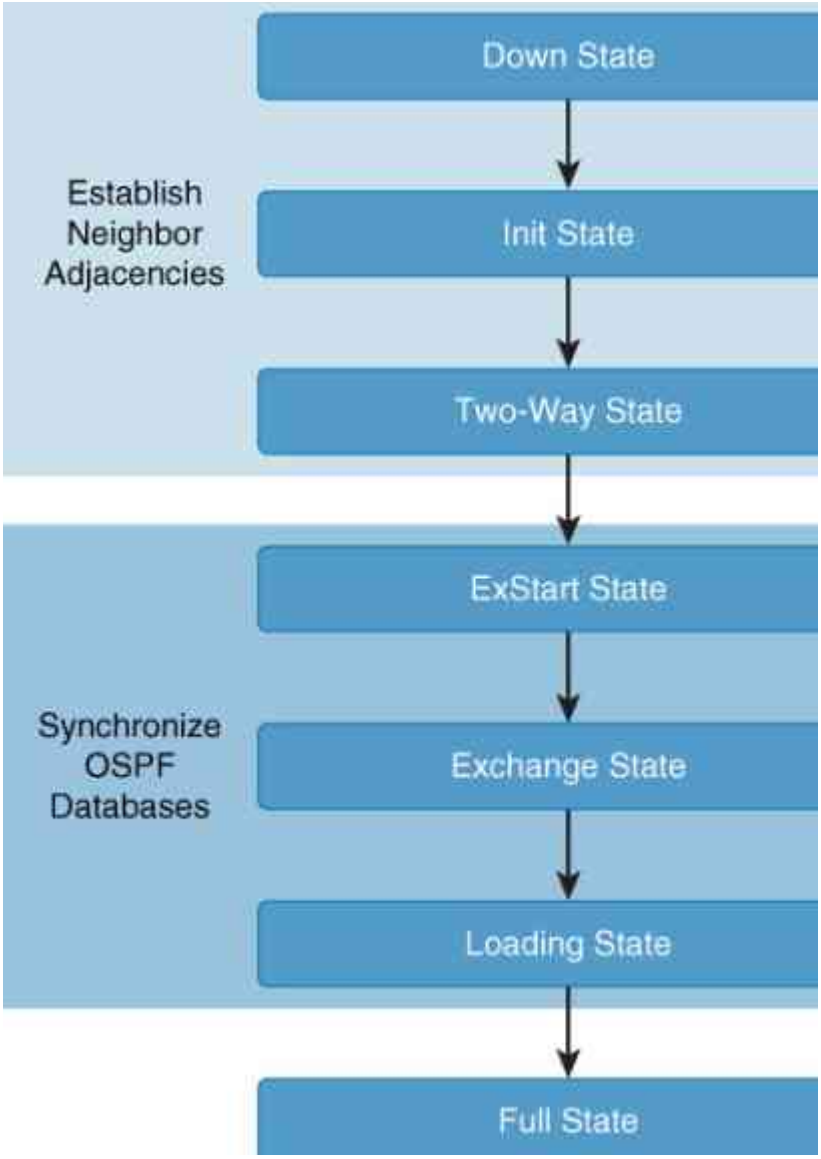
| Severity |
| --- |
| 0-Emergency |
| 1-Alert |
| 2-Critical |
| 3-Error |
| 4-Warning |
| 5-Notice |
| 6-Informational |
| 7-Debug |

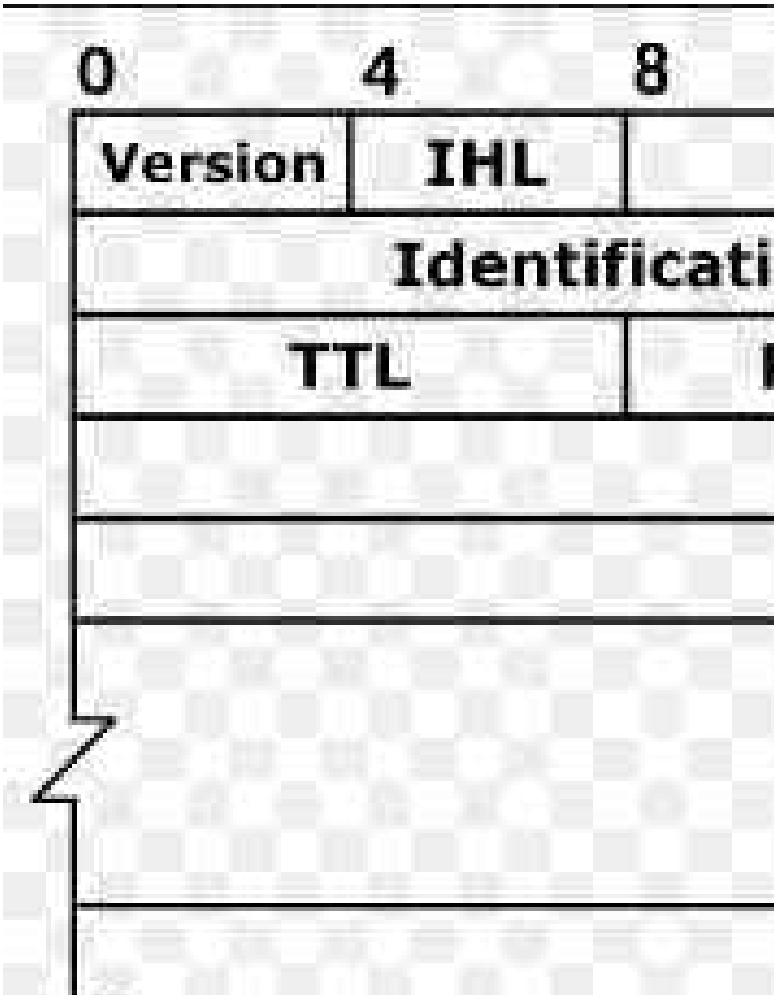
| Group Size | 128 | 64 |
| --- | --- | --- |
| Subnet | 128 | 192 |
| CIDR | /25 | /26 |
| 3rd Octet | /17 | /18 |
| 2nd Octet | /9 | /10 |
| 1st Octet | /1 | /2 |

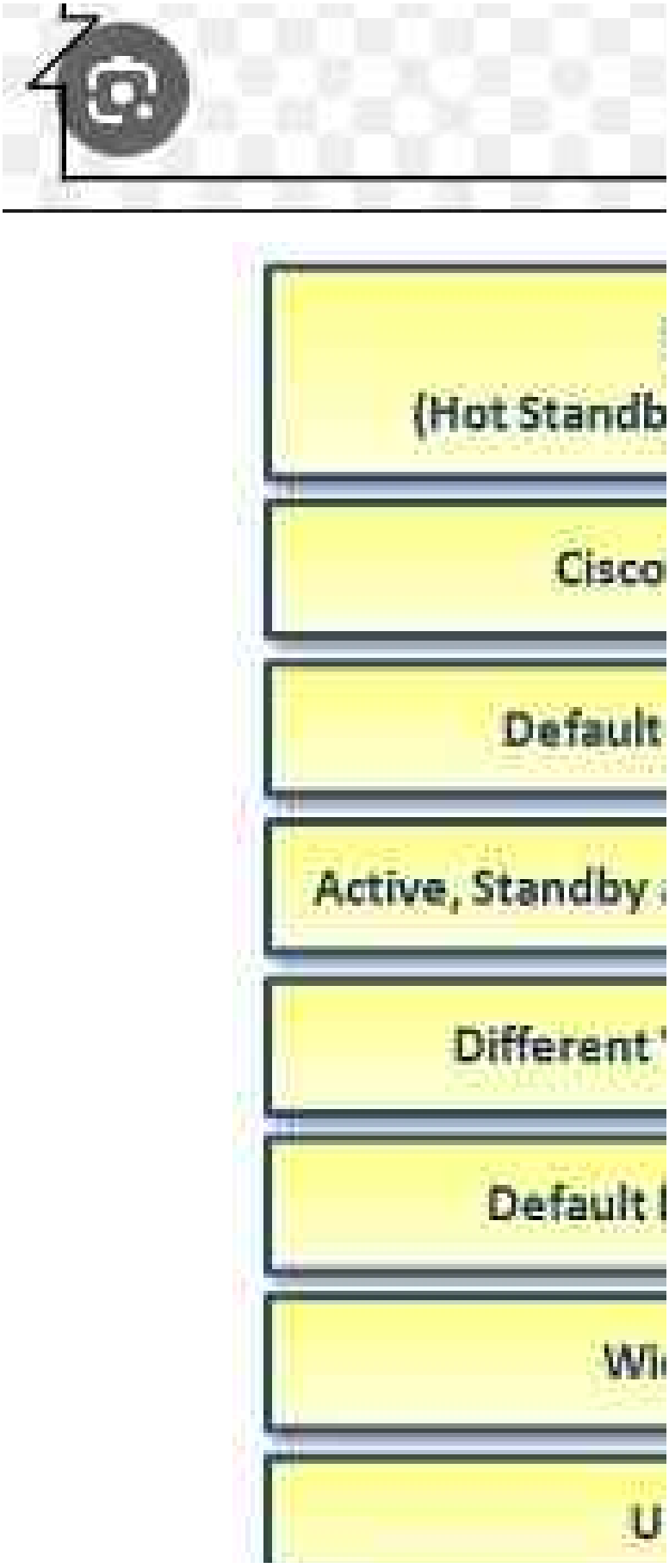


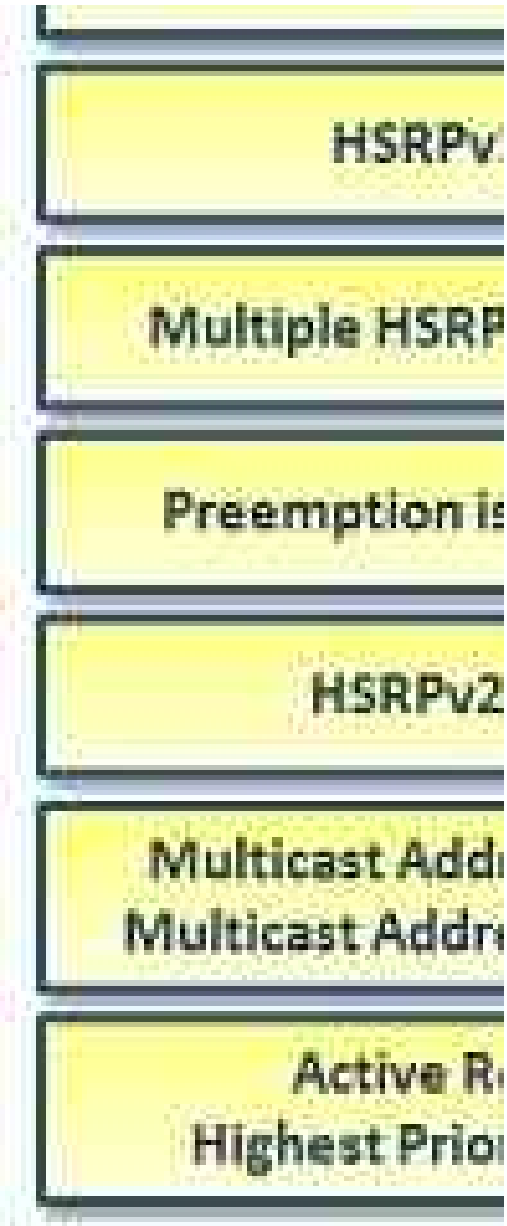
DRAG DROP - Drag and drop the IPv6 DNS record types from the left onto the description on the right. Select and Place:

| | |
|---|---|
| AAAA | aliases one name to another |
| CNAME | associates the domain serial number with its owner |
| NS | correlates a domain with its authoritative name servers |
| PTR | correlates a host name with an IP address |
| SOA | supports reverse name lookups |

| | |
|---|---|
| AAAA | CNAME |
| CNAME | SOA |
| NS | NS |
| PTR | AAAA |
| SOA | PTR |

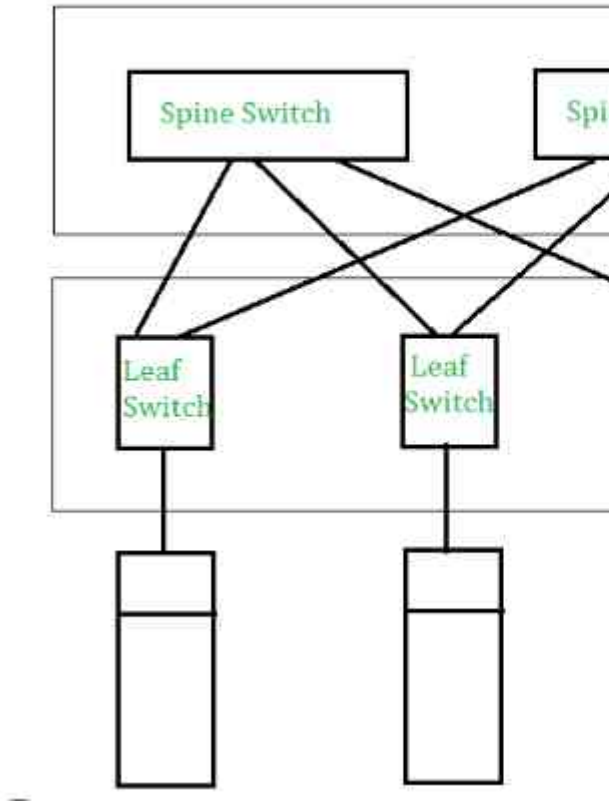



(Hot Standb
Cisco
Default
Active, Standby
Different
Default
U




- **Supernetting to a Single Network**
  1. Identify the **Smallest IP address** and **L**
  2. Determine **Group Size Increment** in rel

SPINE-LEAF AR

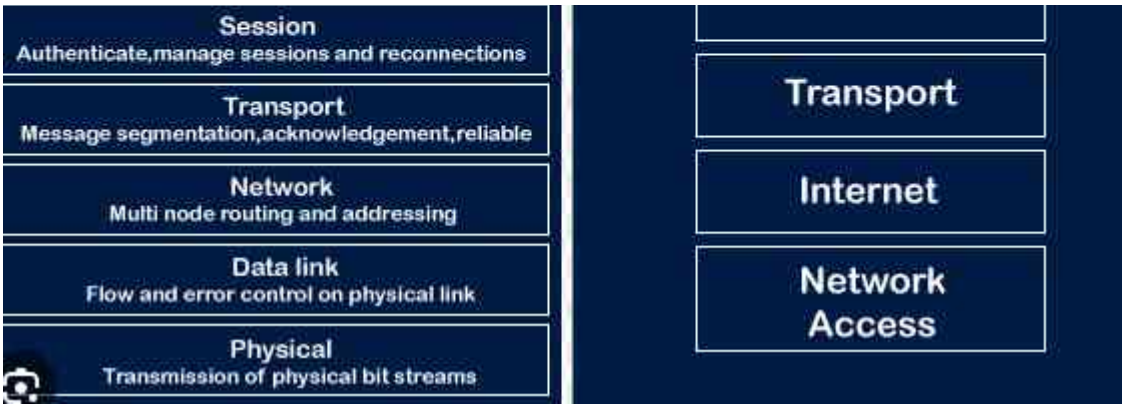


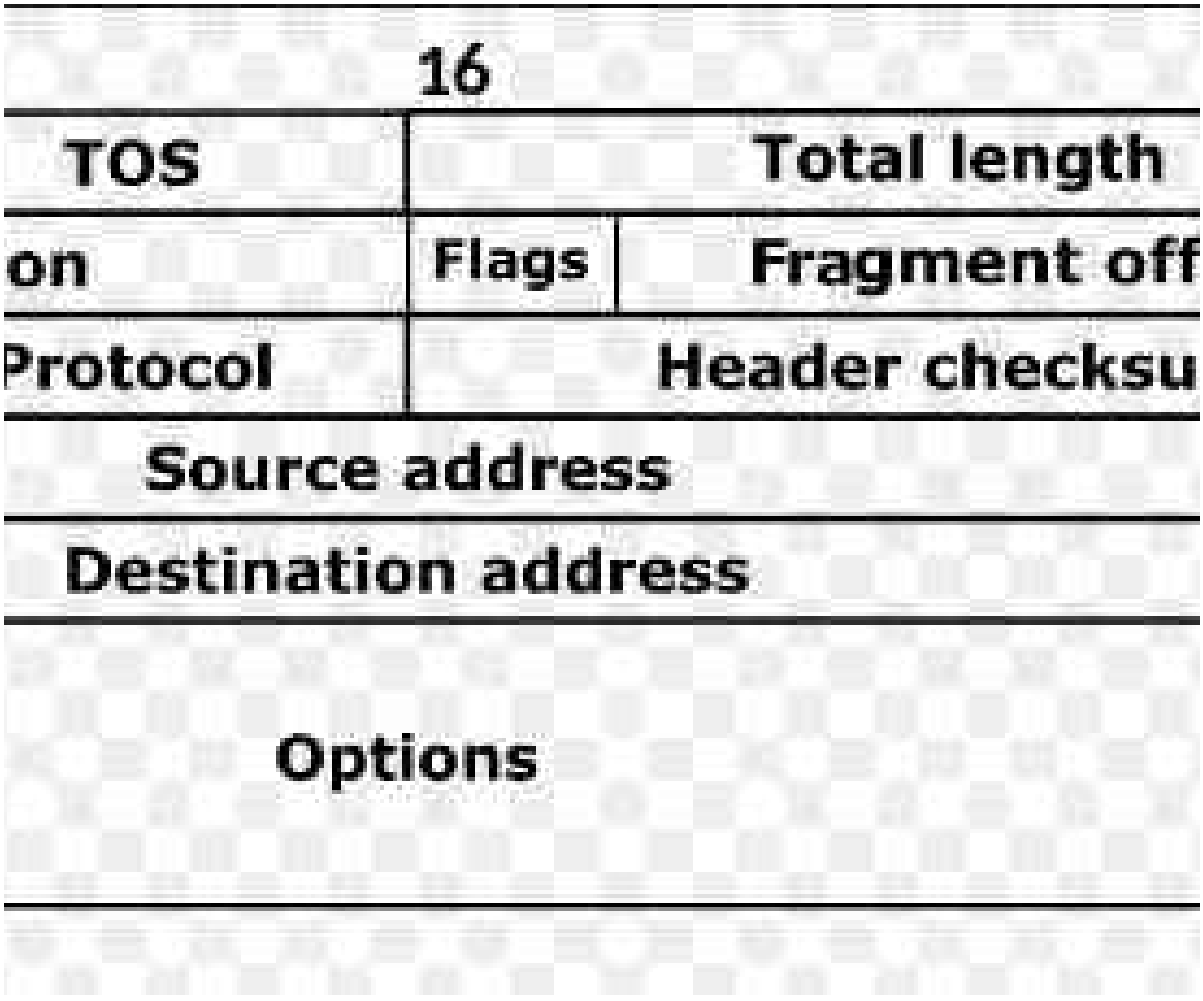
| 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|
| 224 | 240 | 248 | 252 | 254 | 25 |
| /27 | /28 | /29 | /30 | /31 | /3 |
| /19 | /20 | /21 | /22 | /23 | /2 |
| /11 | /12 | /13 | /14 | /15 | /1 |
| /3 | /4 | /5 | /6 | /7 | /8 |

Five Differe

| Class | First Octet decimal (range) | First Octet binary (range) | |
|---|---|---|---|
| Class A | 0—127 | 0XXXXXXX | 0.0.0.0-12 |
| Class B | 128—191 | 10XXXXXX | 128.0.0.0- |
| Class C | 192—223 | 110XXXXX | 192.0.0.0- |
| Class D (Multicast) | 224—239 | 1110XXXX | 224.0.0.0- |
| Class E (Experimental) | 240—255 | 1111XXXX | 240.0.0.0- |

OSI Model & TCP/IP


Session
Authenticate,manage sessions and reconnections
Transport
Message segmentation,acknowledgement,reliable
Network
Multi node routing and addressing
Data link
Flow and error control on physical link
Physical
Transmission of physical bit streams
Transport
Internet
Network Access


16
TOS
Total length
on
Flags
Fragment off
Protocol
Header checksu
Source address
Destination address
Options

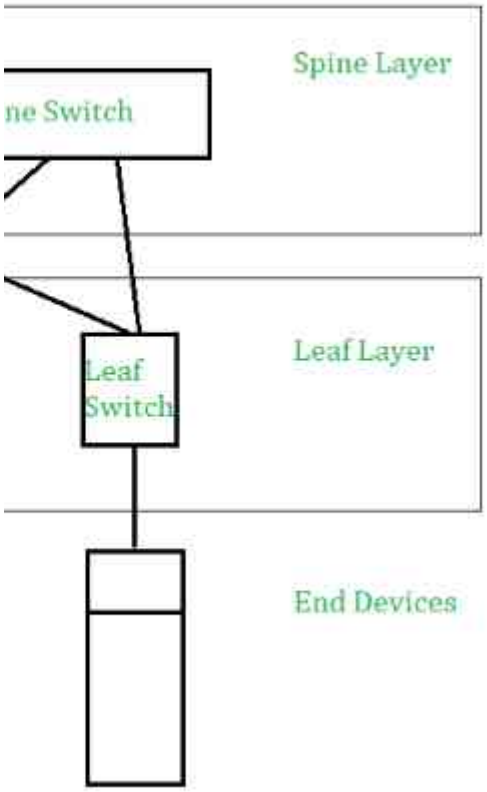

Data
HSRP
y Router Protocol)
V
(Virtual Router R
Proprietary
St
Priority is 100
Default P
and Listenning Routers
Master and
Virtual IP is used
Virtual IP ca
Hello 3seconds
Default H
dely Used
Wid
DP 1985


1. Use
   a.
   b.

argest IP address

levant Octet which includes both

CHITECTURE




c.
d.
2. Num
3. Num
4. IP ad
5. IP ad
6. IP ad
7. 2^(3
•

You issue the **show vlan bri**

```
Switch1#show vlan brief
VLAN Name
---- --------------------
1    default
11   VLAN0011

12   VLAN0012
```

```
14   VLAN0014

<output omitted>
```

You issue the following comr

```
Switch1#configure termin
Switch1(config)#ip arp i
Switch1(config)#interfac
Switch1(config-if-range)
Switch1(config-if-range)
Switch1(config-if-range)
```

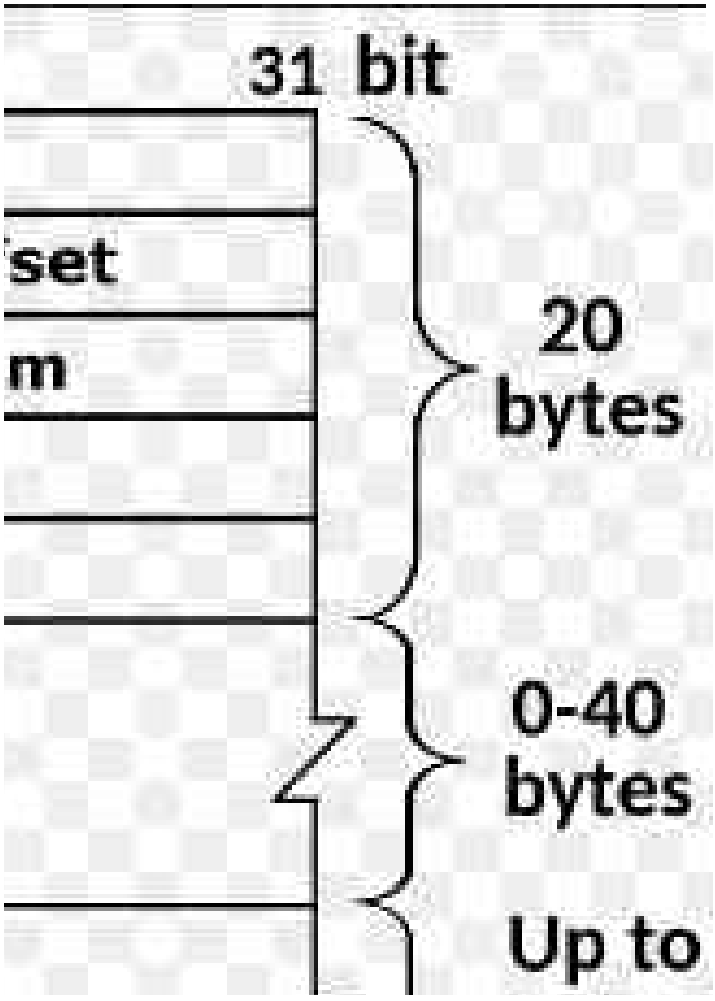
Which of the following staten

5
2
4
6


nt Classes of IPv4 Addresses

| IP range | Subnet Mask | Hosts per Network ID | # net |
|---|---|---|---|
| 27.255.255.255 | 255.0.0.0 | $2^{24}-2$ | |
| -191.255.255.255 | 255.255.0.0 | $2^{16}-2$ | |
| -223.255.255.255 | 255.255.255.0 | $2^{8}-2$ | |
| -239.255.255.255 | | | |
| -255.255.255.255 | | | |

| Priv |
| --- |
| From |
| 10.0.0.0 |
| 172.16.0.0 |
| 192.168.0.0 |



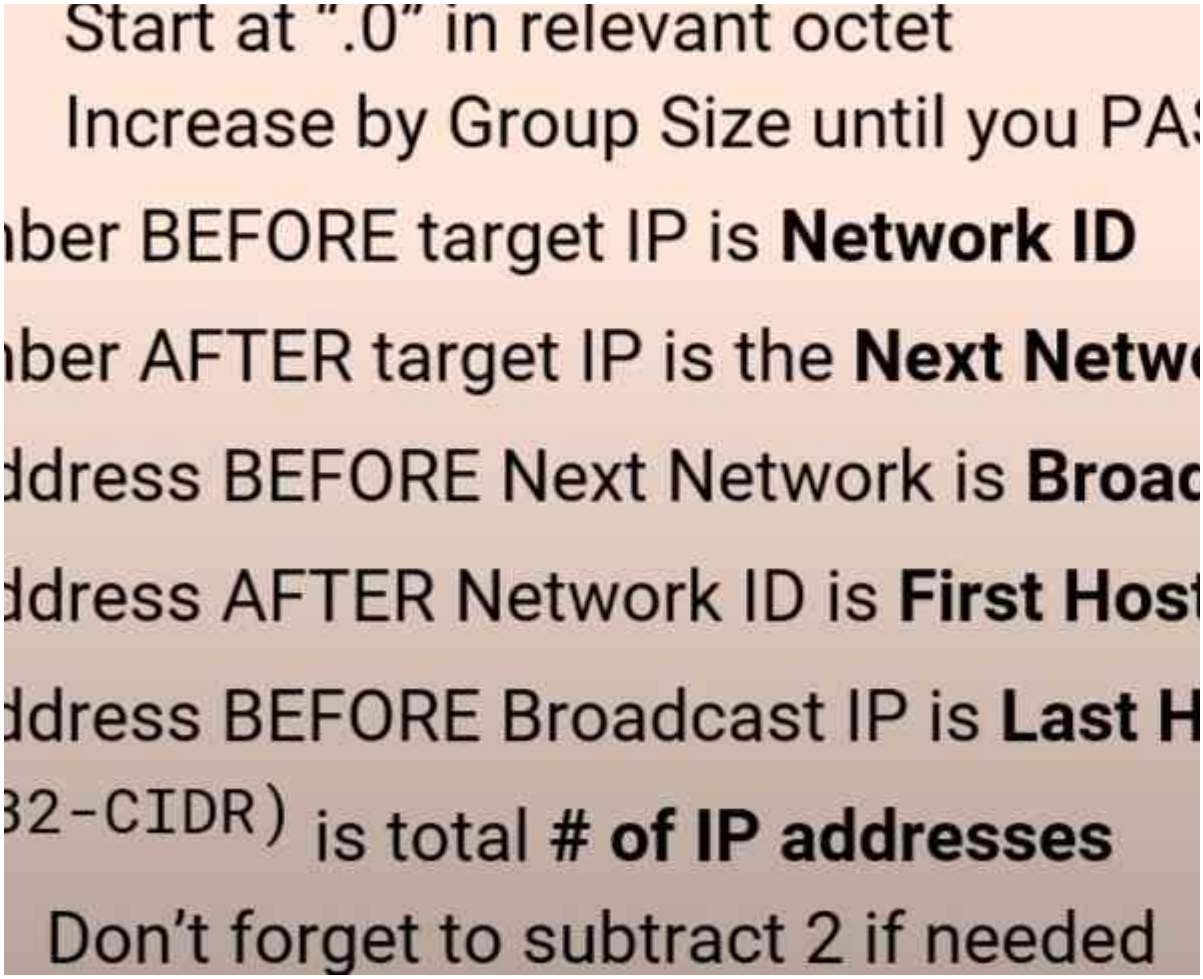

| PARA |
| --- |
| Abbre |
| Stand |
| Config |
| Mode |
| Multi |
| Addre |
| Suppo |
| Year o |
| Introd |


65515
bytes
1,200 × 547
Config
/RRP
tedundancy Protocol)
(Gateway Load B
andard
Cisco Pr
Priority is 100
Default Pr
Backup Routers
AVG and AVF Ro
n be Interface IP
Different Vir
lello 1 second
Default He
ely Used
Rare
P 112
UDP


given CIDR/mask to find column on C

**CIDR/Subnet** Mask map to each oth

Locate Group size




**ef** command on Switch1 and receive the following partial output:

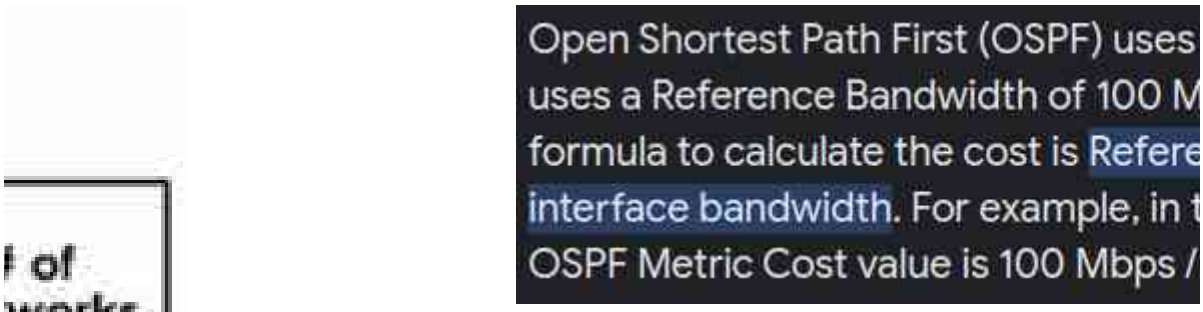
```
          Status    Ports
--------- --------- --------------------------------
          active    Gi0/1, Gi0/2
          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                    Fa0/5, Fa0/6, Fa0/7, Fa0/8
                    Fa0/9, Fa0/10
          active    Fa0/11, Fa0/12, Fa0/13, Fa0/14
                    Fa0/15, Fa0/16, Fa0/17, Fa0/18
                    Fa0/19
```

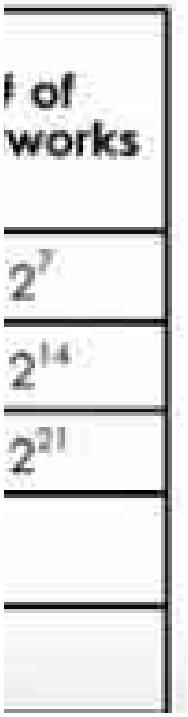
```
active    Fa0/20, Fa0/21, Fa0/22, Fa0/23
          Fa0/24
```

nands on Switch1:

```
al
nspection vlan 11-12,14
e range gigabitethernet 0/1 - 2
#switchport access vlan 11
#switchport mode access
#ip arp inspection
```

nents is true? *(Select the best answer.)*

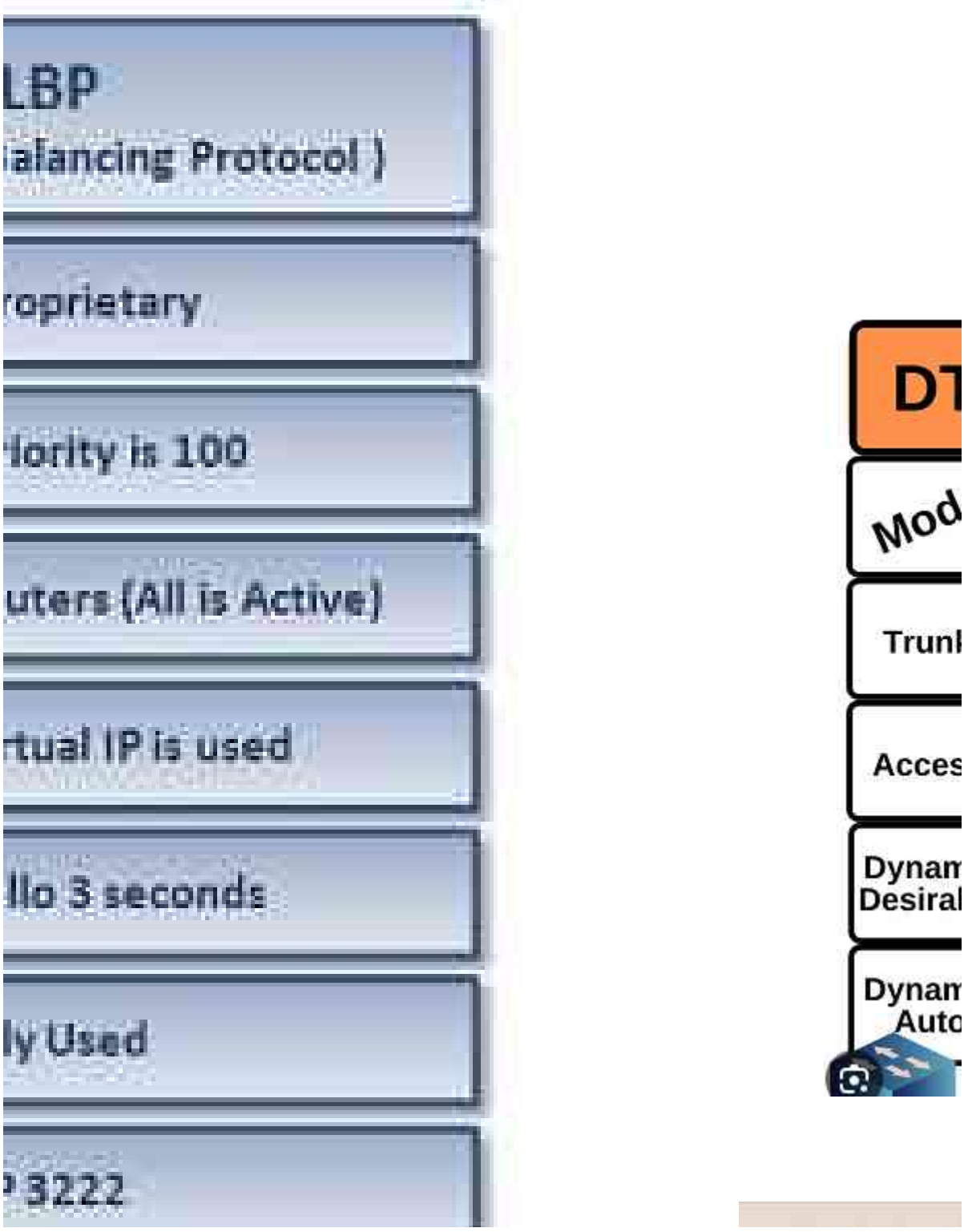

| Route Source (Protocol) | Default AD |
|---|---|
| Connected interface | 0 |
| Static route out an interface | 0 |
| Static route to a next hop | 1 |
| EIGRP summary route | 5 |
| External BGP | 20 |
| Internal EIGRP | 90 |
| IGRP | 100 |
| OSPF | 110 |
| IS-IS | 115 |
| RIP v1 and RIP v2 | 120 |
| EGP | 140 |
| External EIGRP | 170 |

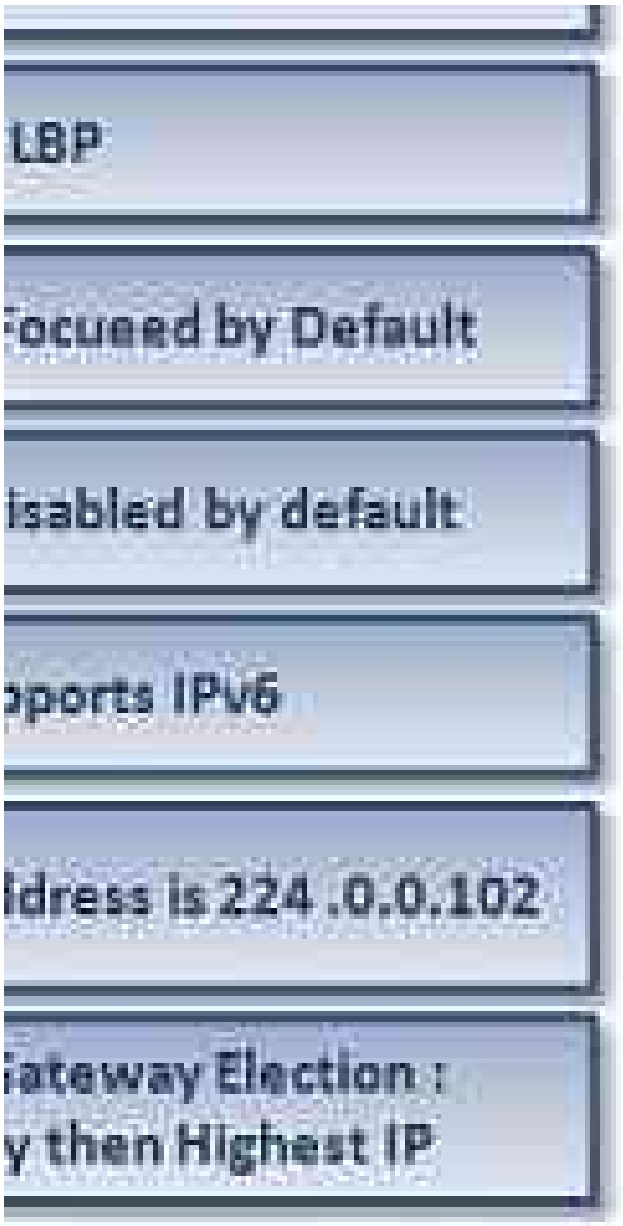
| | |
|---|---|
| Internal BGP | 200 |
| Unknown | 255 |

| ate IP address space | |
|---|---|
| | To |
| | 10.255.255.255 |
| | 172.31.255.255 |
| | 192.168.255.255 |

| AMETERS | PAGP | |
|---|---|---|
| viation for | Port Aggregation Protocol | Link Aggr |
| ard | Cisco Proprietary | Open Sta |
| guration s | • Auto<br>• Desirable | • Activ<br>• Passiv |
| cast ss | 01-00-0C-CC-CC-CC | 01-80-c2- |
| rted by | Etherchannel | Ethercha |
| f luction | Invented in the early 1990s | IEEE pass |

| guration | Switch(config-if)#channel-group 1 mode <Desirable/Auto> | Switch(co <Active/P |
|---|---|---|






heat Sheet
ner

Defining

| Original IEEE | IEEE Short Name |
|---|---|
| 802.3i | 10BA |
| 802.3u | 100B |
| 802.3z | 1000 |
| 802.3ab | 1000 |
| 802.3ae | 10GE |
| 802.3an | 10GE |
| 802.3ba | 40GE |
| 802.3ba | 100G |

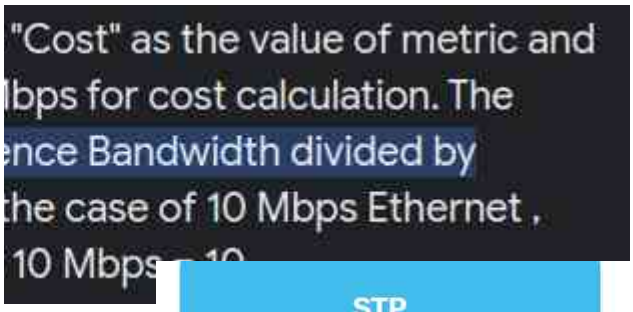
IEEE 802.11 S
Comparison

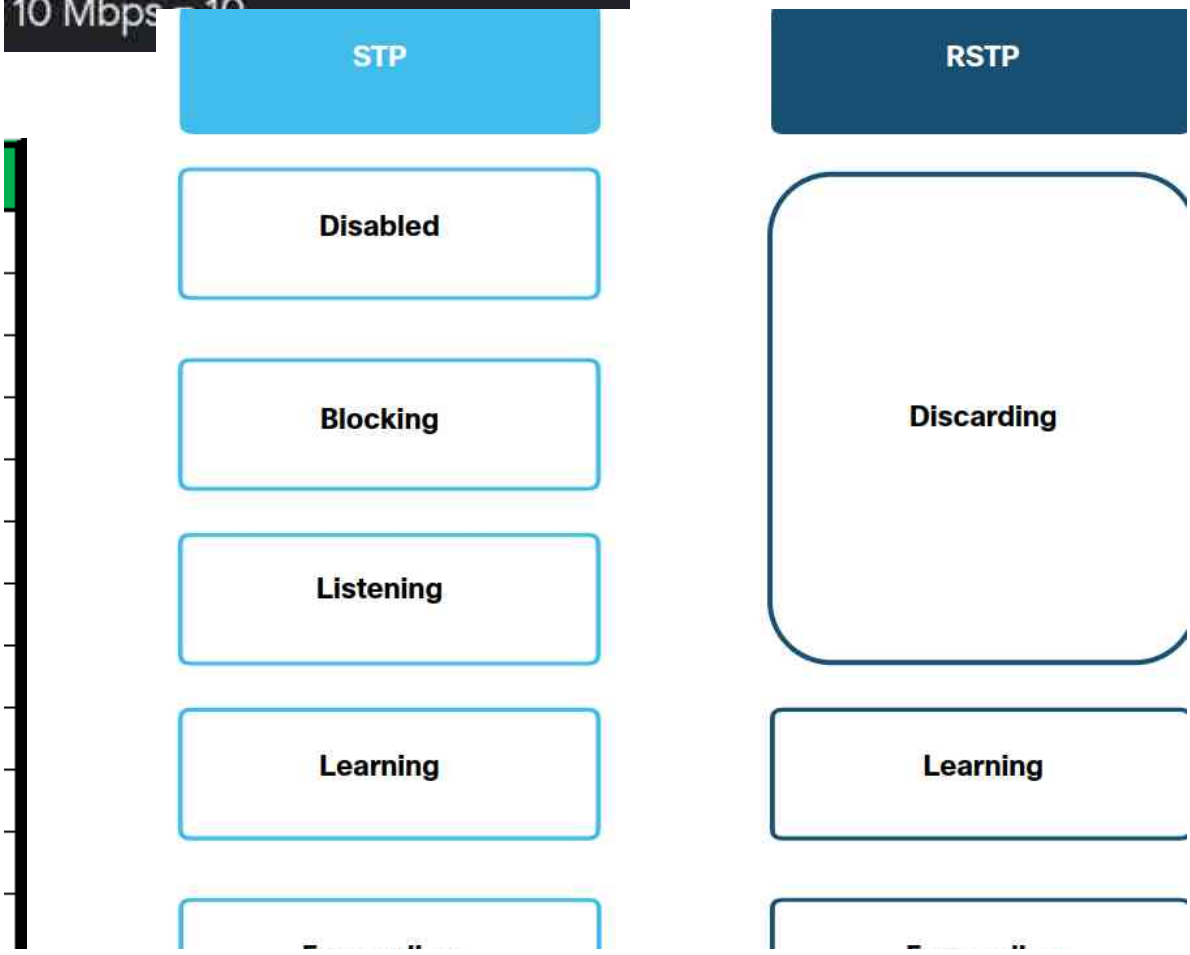
| | 802.11 |
|---|---|
| Frequency band | 2.4 GH |
| No. of channels | 3 |
| Transmission | Direct Sequen Spread Spectru (DSSS |
| Data rates [Mb/s] | 1, 2, 5.5, |


SS target IP
ork
dcast
t
lost


3-TIE
Other
"Class
"Hierc
Core
Distrib
Acce


h using five metrics:
MTU.


"Cost" as the value of metric and
lbps for cost calculation. The
ence Bandwidth divided by
the case of 10 Mbps Ethernet ,
10 Mbps


STP
RSTP
Disabled
Blocking
Listening
Learning
Discarding
Learning

Forwarding | Forwarding

| Link Speed | STP Cost: IEEE 802.1D-1998 | RSTP Cost: IEEE 802.1w-2004 |
|---|---|---|
| 10 Gbps | 2 | 2,000 |
| 1 Gbps | 4 | 20,000 |
| 100 Mbps | 19 | 200,000 |
| | | 00,000 |

STP

oot Port

gnated Port

ocked Port
-Designated Port)

RSTP

Root Port

Designated Port

Backup Port

Alternate Port

LACP

egation Control Protocol

ndard (IEEE 802.3ad)

e

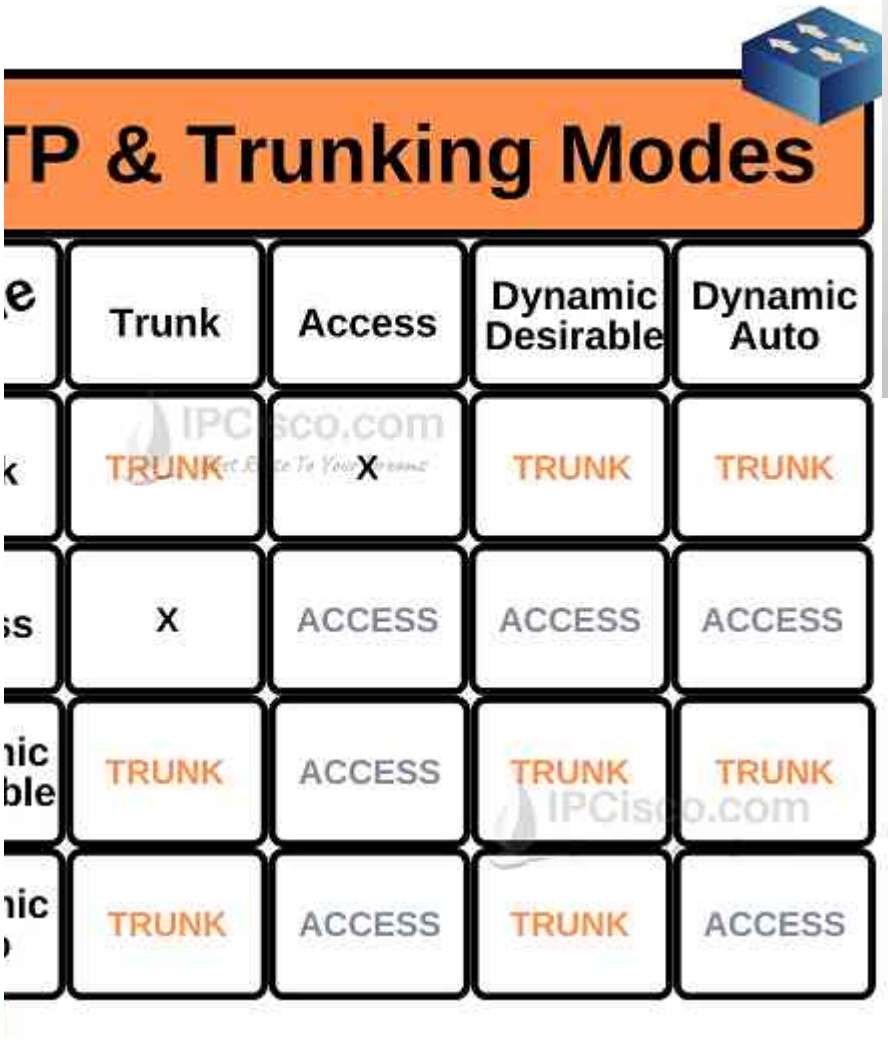
ve

-00-00-02

nnel and 802.3ad

ed 802.3ad (LACP) In year 2000

onfig-if)#channel-group 1 mode
Passive>



## Ethernet LANs: Standard Names

| thand e | Informal Name(s) | Speed | Typical Cabling |
|---|---|---|---|
| ASE-T | Ethernet | 10 Mbps | UTP |
| BASE-T | Fast Ethernet (Fast E) | 100 Mbps | UTP |
| BASE-X | Gigabit Ethernet (Gig E, GbE) | 1000 Mbps | Fiber |
| BASE-T | Gigabit Ethernet (Gig E, GbE) | 1000 Mbps | UTP |
| BASE-X | 10 GbE | 10 Gbps | Fiber |
| BASE-T | 10 GbE | 10 Gbps | UTP |
| BASE-X | 40GbE (40 GigE) | 40 Gbps | Fiber |
| BASE-X | 100GbE (100 GigE) | 100 Gbps | Fiber |

## Standards

| b | 802.11a | 802.11g | |
|---|---|---|---|
| z | 5 GHz | 2.4 GHz | |
| | Up to 23 | 3 | |
| ce d m ) | Orthogonal Frequency Division Multiplexing (OFDM) | Direct Sequence Spread Spectrum (DSSS) | Orthogonal Frequency Division Multiplexing (OFDM) |
| 11 | 6, 9, 12, 18, 24, 36, 48, 54 | 1, 2, 5.5, 11 | 6, 9, 12, 18, 24, 36, 48, 54 |


R MODEL
r names!
sic"
archical"
– backbone
bution – aggregation
ess – workstation

| Port State | Description |
|---|---|
| Blocking | The port is an alternate port and does not participate in frame forwa determine the location and root ID of the root bridge. BPDU frames port should assume in the final active STP topology. With a Max Age not received an expected BPDU from a neighbor switch will go into |
| Listening | After the blocking state, a port will move to the listening state. The p the root. The switch port also transmits its own BPDU frames and in is preparing to participate in the active topology. |
| Learning | A switch port transitions to the learning state after the listening state receives and processes BPDUs and prepares to participate in frame MAC address table. However, in the learning state, user frames are |
| Forwarding | In the forwarding state, a switch port is considered part of the active traffic and sends and receives BPDU frames. |
| Disabled | A switch port in the disabled state does not participate in spanning disabled state is set when the switch port is administratively disable |

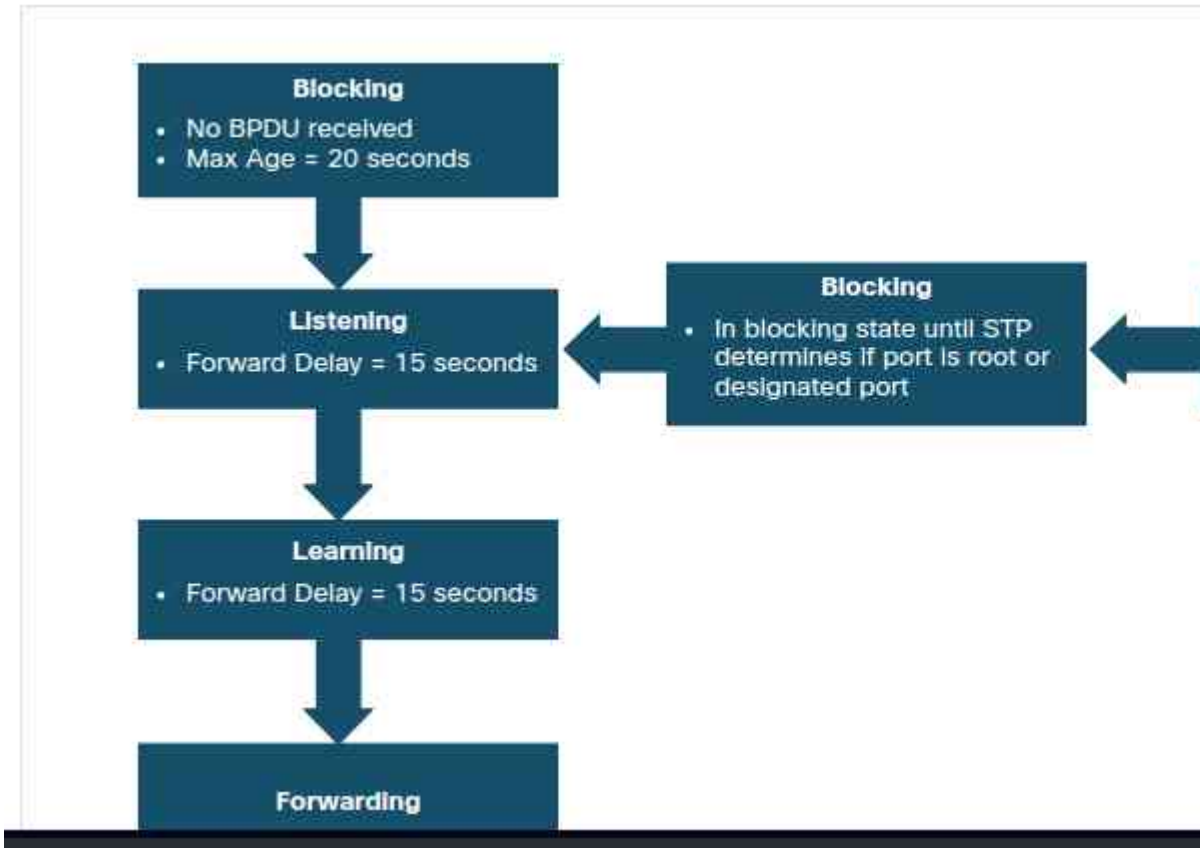
STP convergence requires three timers, as follows:

- **Hello Timer** -The hello time is the interval between BPDUs. The default is 2 seconds bu 10 seconds.
- **Forward Delay Timer** -The forward delay is the time that is spent in the listening and le seconds but can be modified to between 4 and 30 seconds.
- **Max Age Timer** -The max age is the maximum length of time that a switch waits before topology. The default is 20 seconds but be modified to between 6 and 40 seconds.

**Note**: The default times can be changed on the root bridge, which dictates the value of the

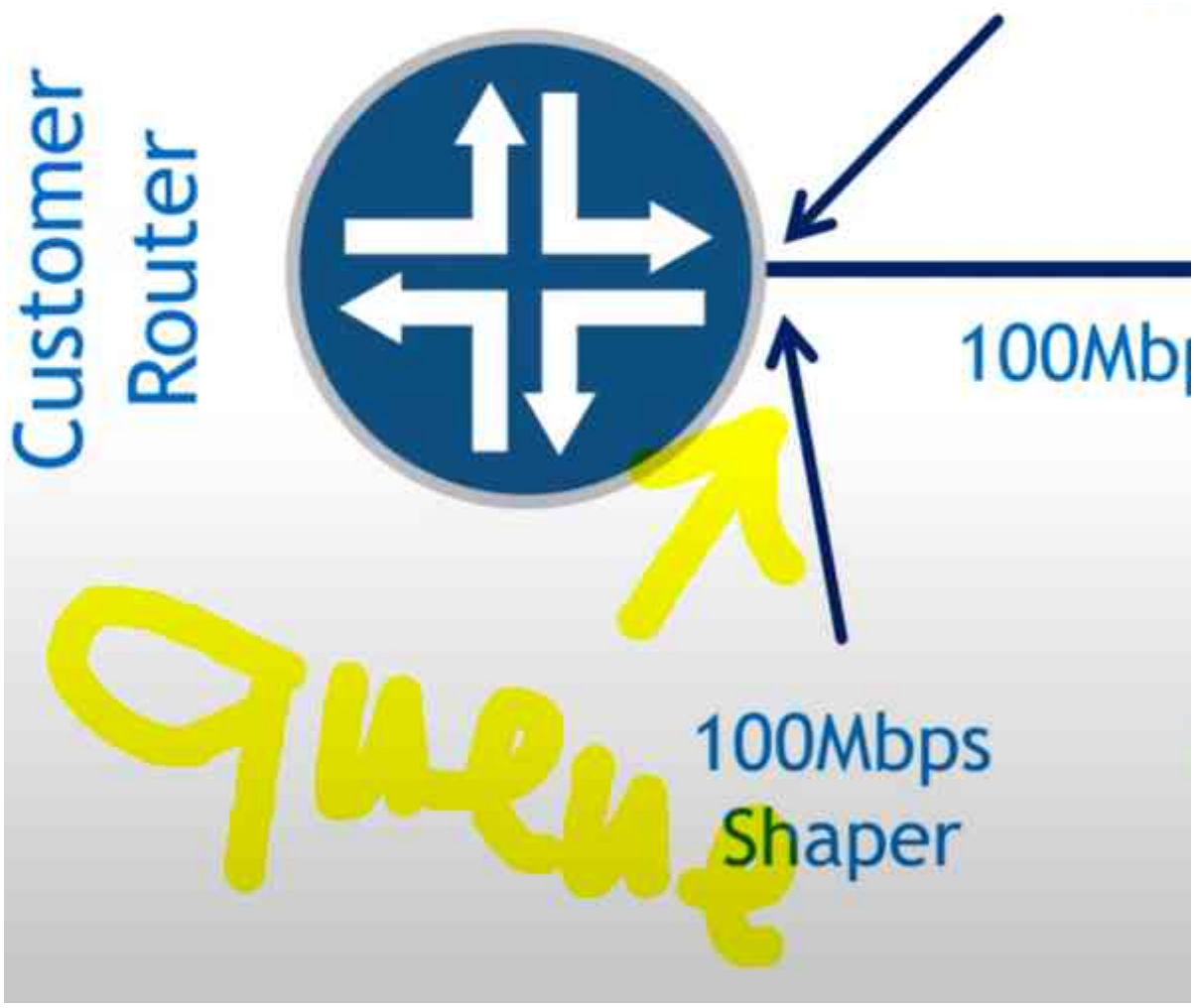
STP facilitates the logical loop-free path throughout the broadcast domain. The spanning t
information learned by the exchange of the BPDU frames between the interconnected swit
directly from the blocking state to the forwarding state without information about the full to
can temporarily create a data loop. For this reason, STP has five ports states, four of which
in the figure. The disabled state is considered non-operational.

**Note**: To avoid problems with STP, IEEE recommends a maximum diameter of seven switch

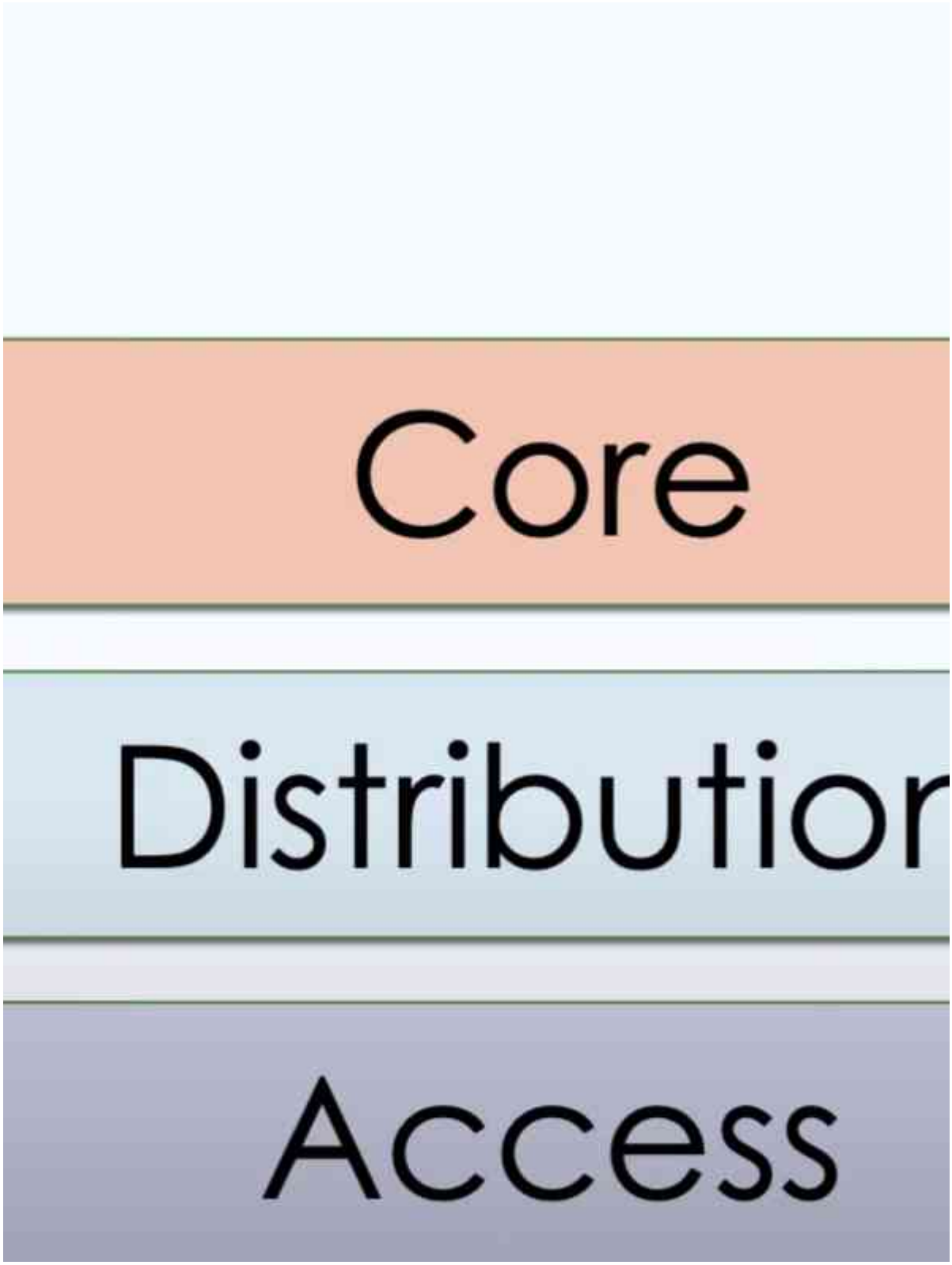



# Combining Policir

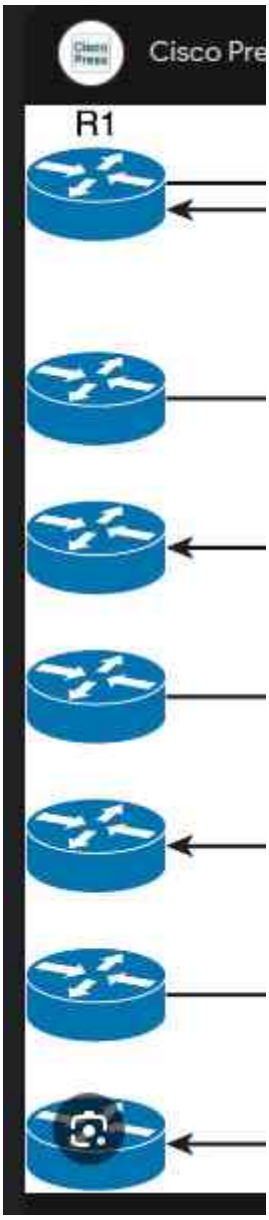
1Gbp


Customer
Router
100Mb
Queue
100Mbps
Shaper

| | |
|---|---|
| nterface down | Interface |
| High number of collisions | There is a device an negotiatio |
| High number of runts and giants, and/or high number of ate collisions | Interface |


Core
Distributior
Access


Administrative Mode
Trunk
Dynamic Desirable
Access
Dynamic Auto




rding. The port receives BPDU frames to also determine which port roles each switch timer of 20 seconds, a switch port that has the blocking state.

port receives BPDUs to determine the path to forms adjacent switches that the switch port

. During the learning state, the switch port forwarding. It also begins to populate the not forwarded to the destination.

topology. The switch port forwards user

tree and does not forward frames. The d.

Which of t

A.

t can be modified to between 1 and

B.

arning state. The default is 15

attempting to change the STP

C.

D.

se timers for the STP domain.

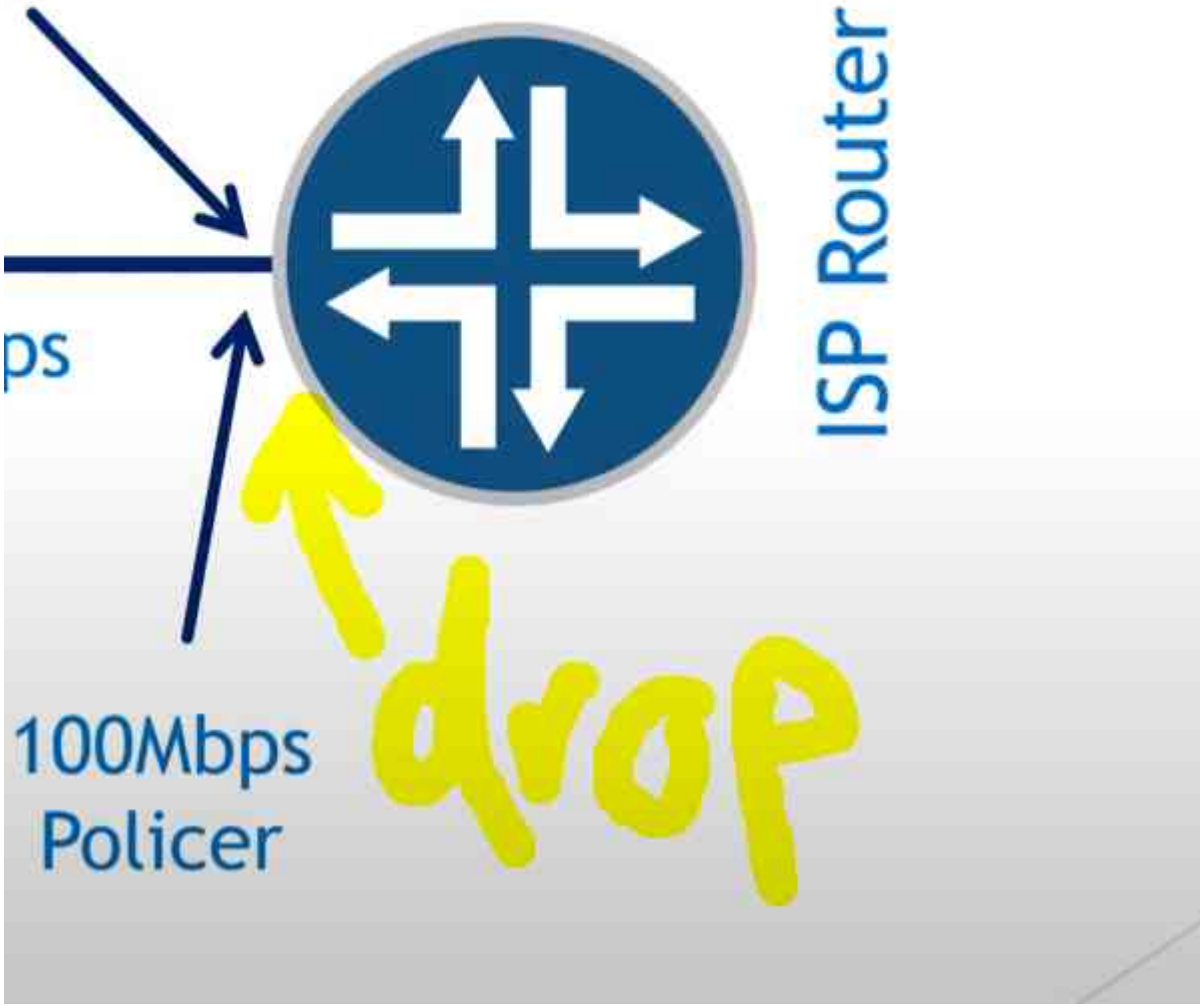
ree is determined through the
ches. If a switch port transitions
pology during the transition, the port
are operational port states as show

es when using the default STP timer

Corre
Correc

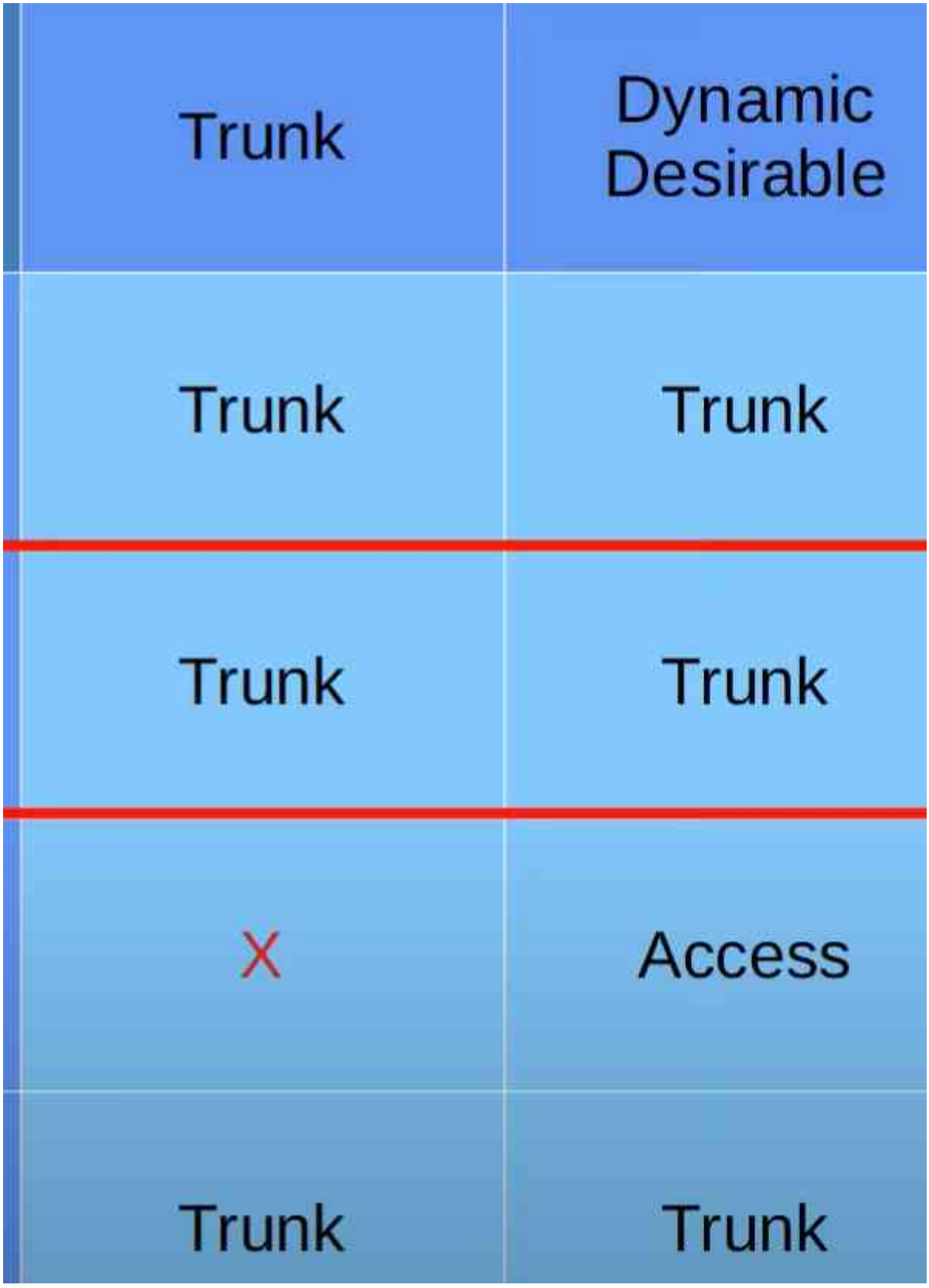

ng and Shaping

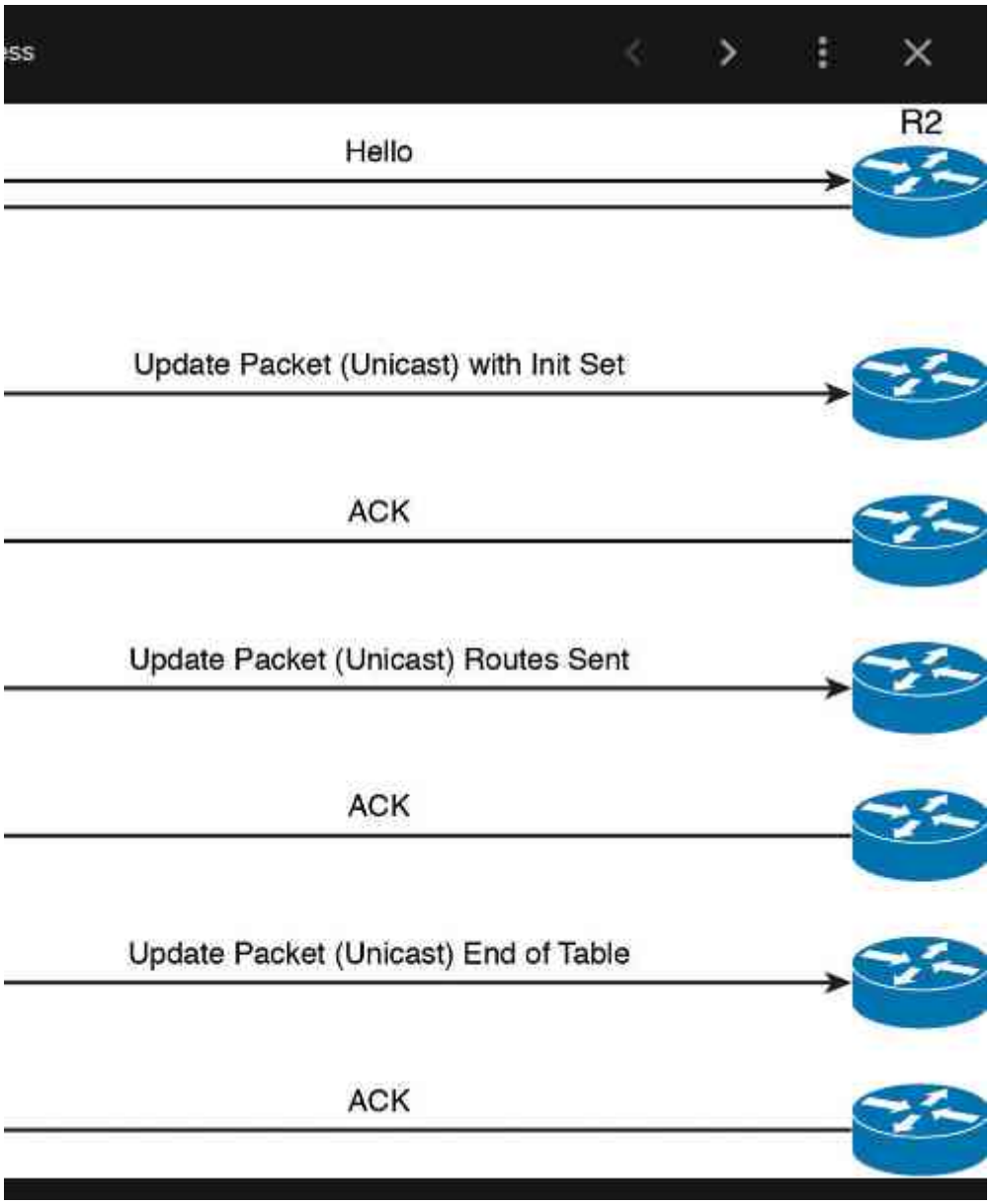
S


ps
ISP Router
drop
100Mbps
Policer

| | |
|---|---|
| is full-duplex | Set<br>dup |
| bandwidth mismatch between this<br>d the other device, or bandwidth<br>on is not working | Set<br>cor<br>rest |
| is half-duplex | Set<br>dup |


Off
Auto
Desirable
Active
On


Trunk
Dynamic Desirable
Trunk
Trunk
Trunk
Trunk
X
Access
Trunk
Trunk




ıe following addresses is the IPv6 loopback address? *(Select the best answer.)*

::127.0.0.1

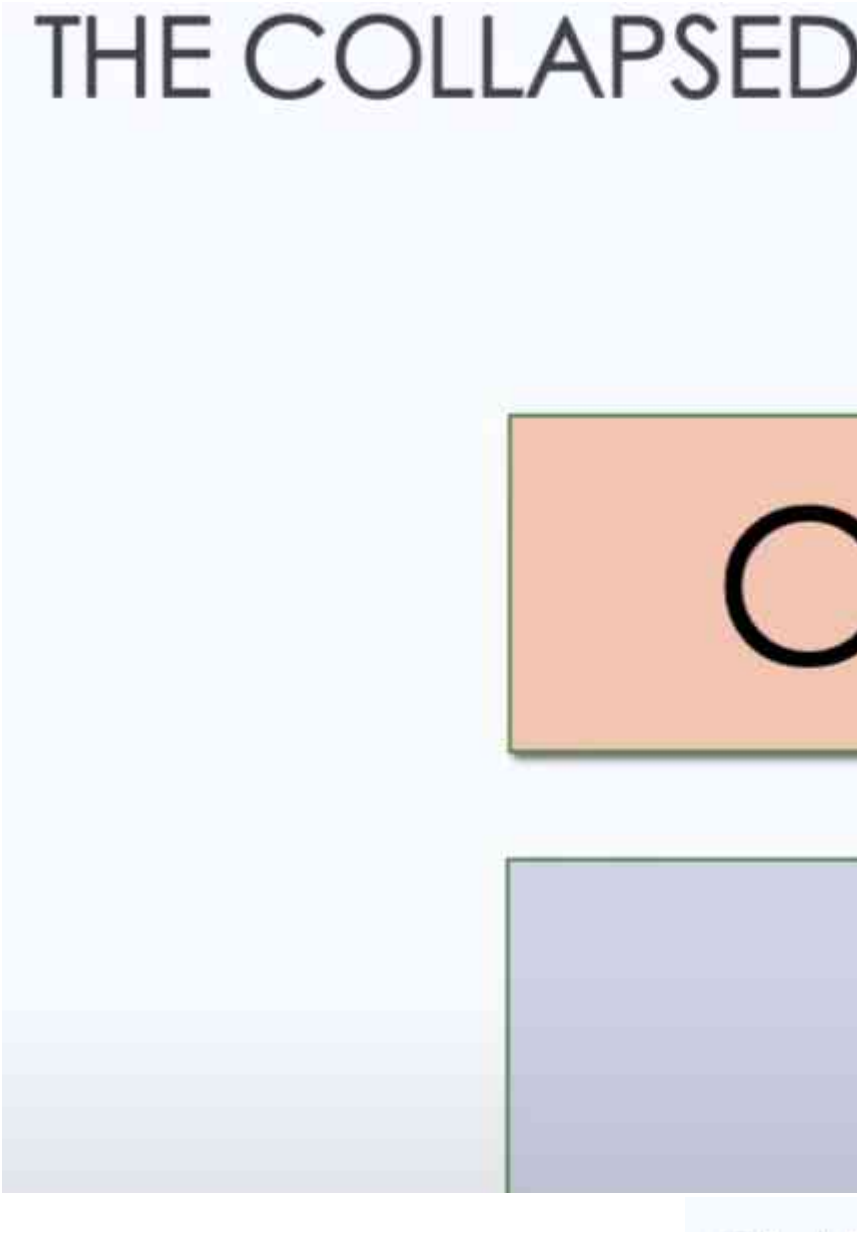
::1

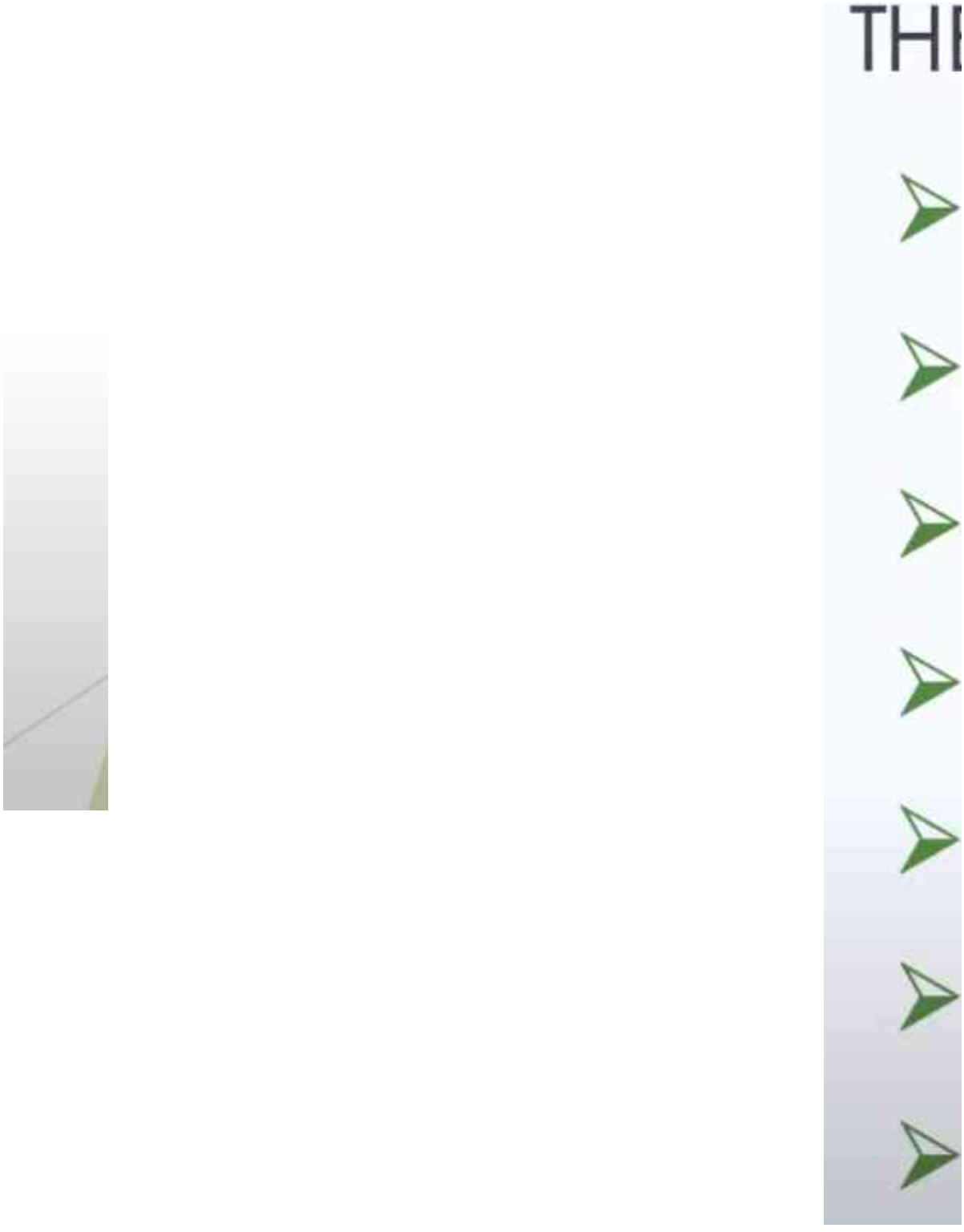
::

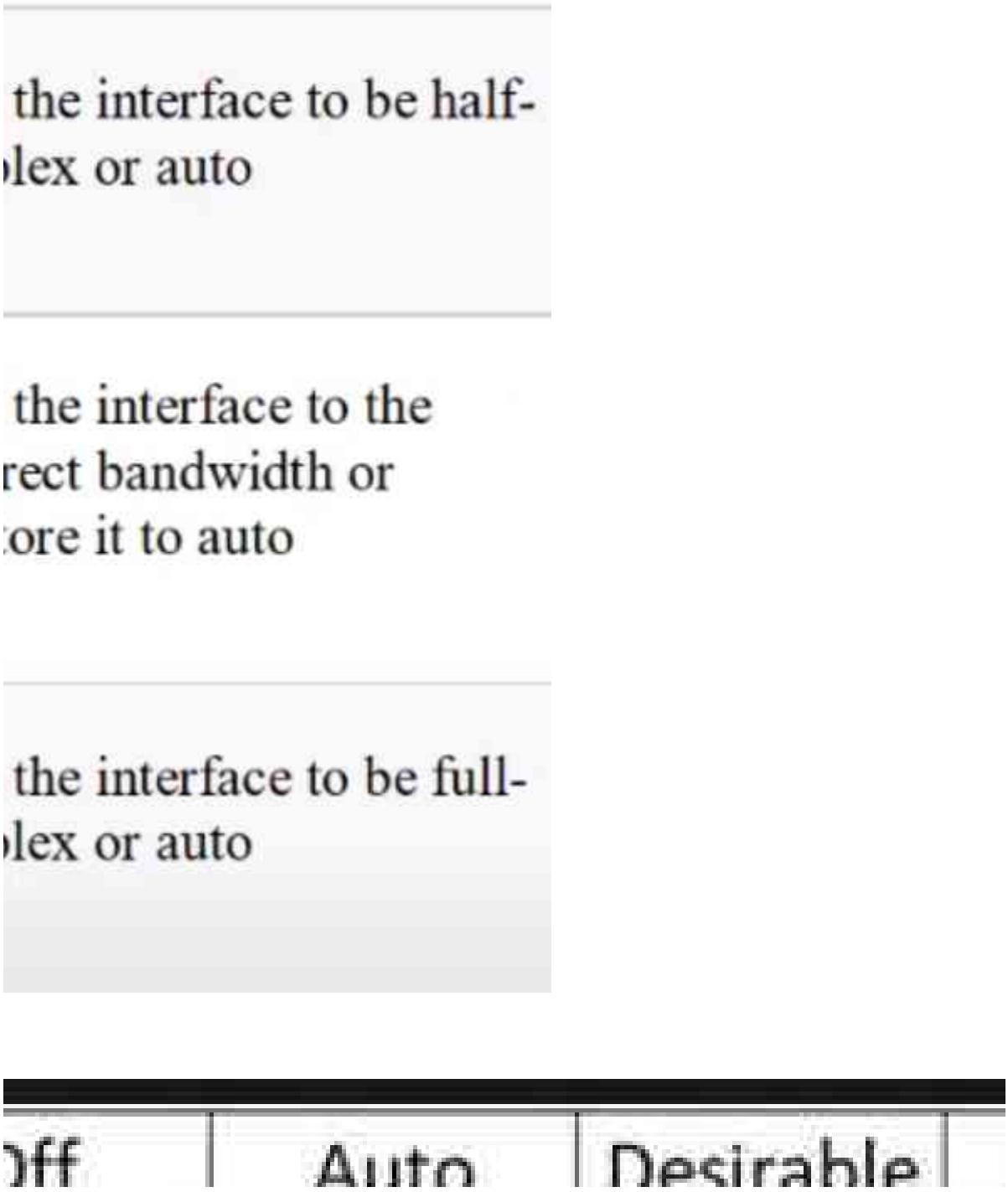
FF01::1

ct

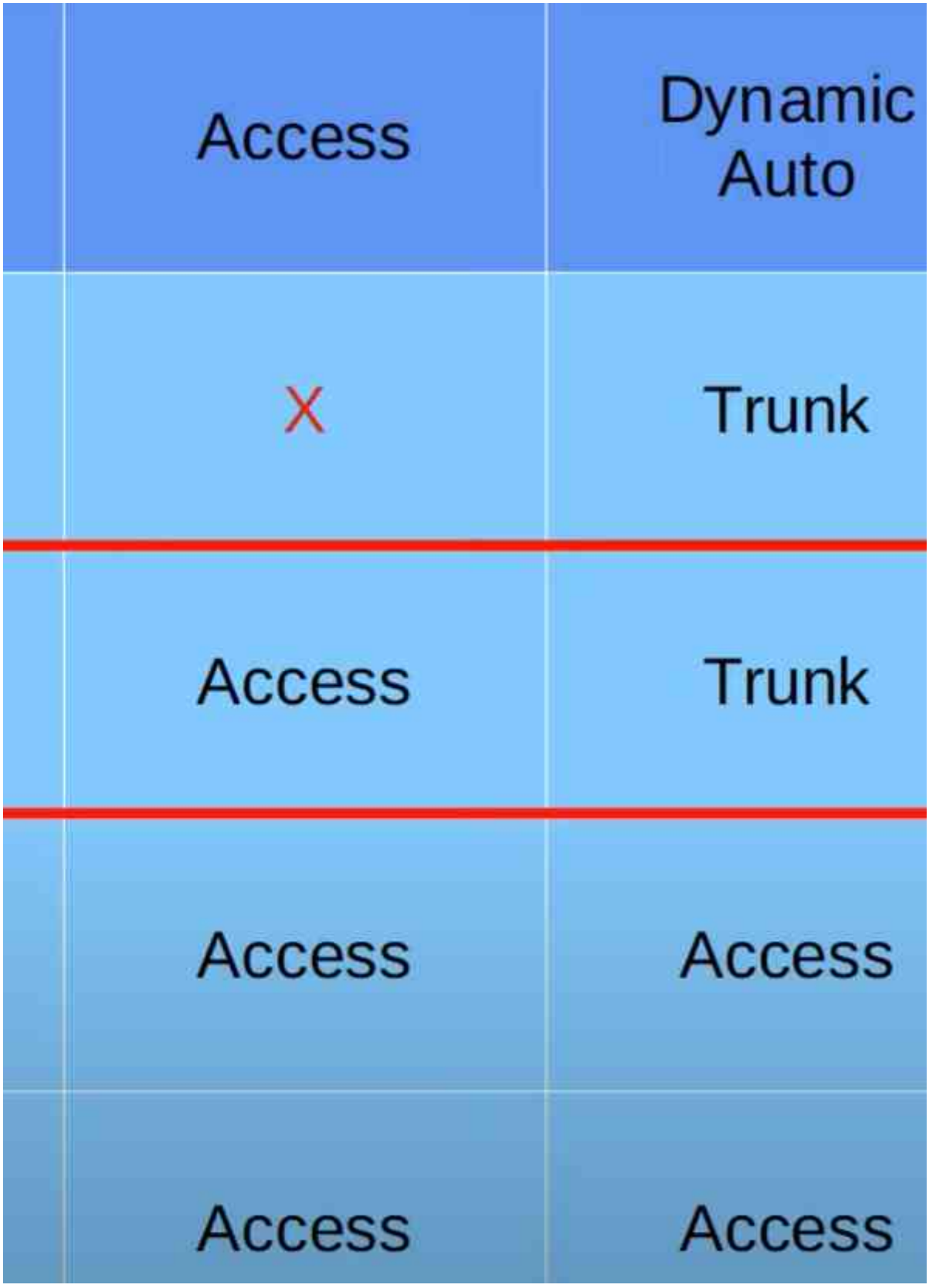
t Answer(s): B

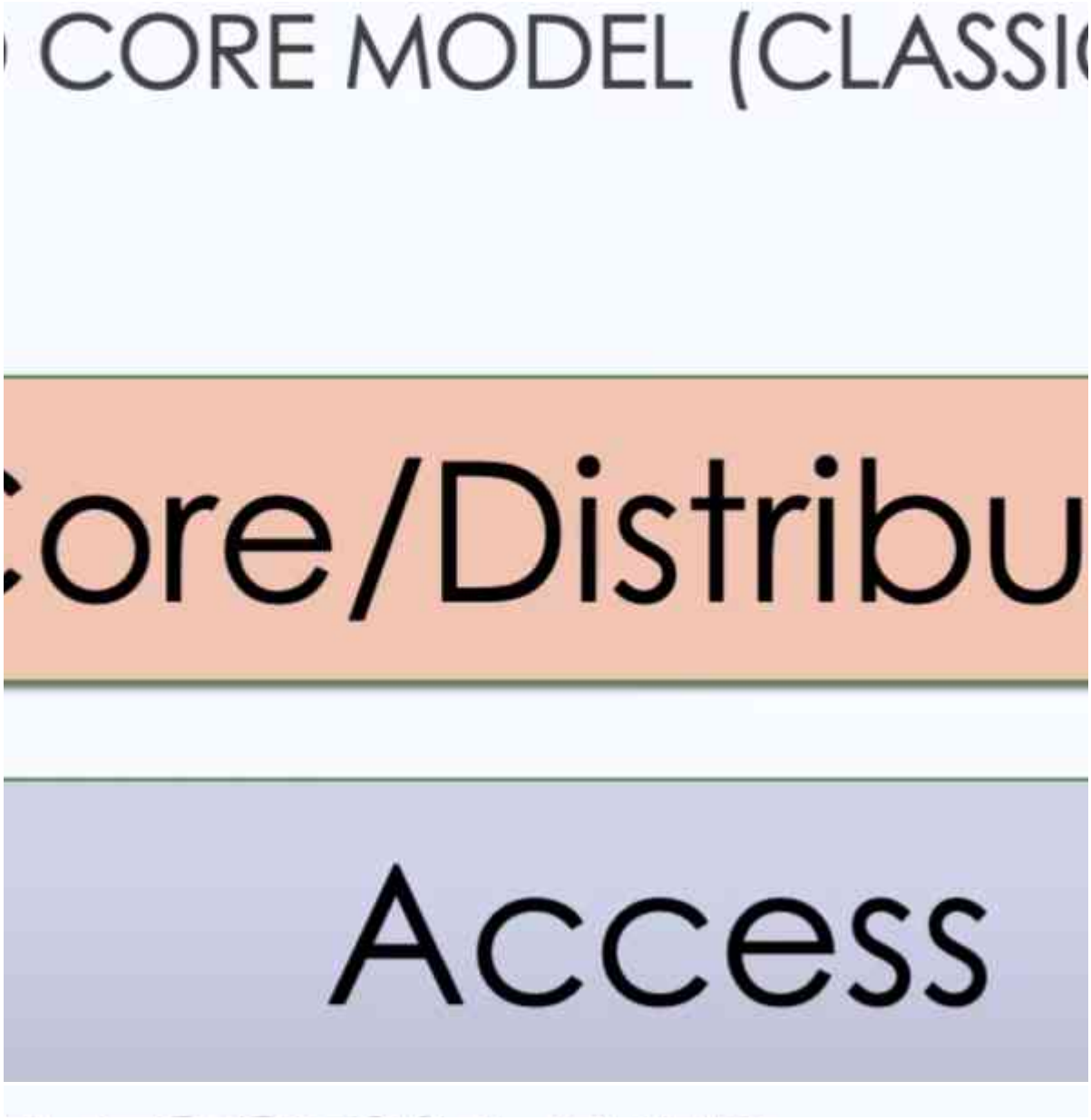


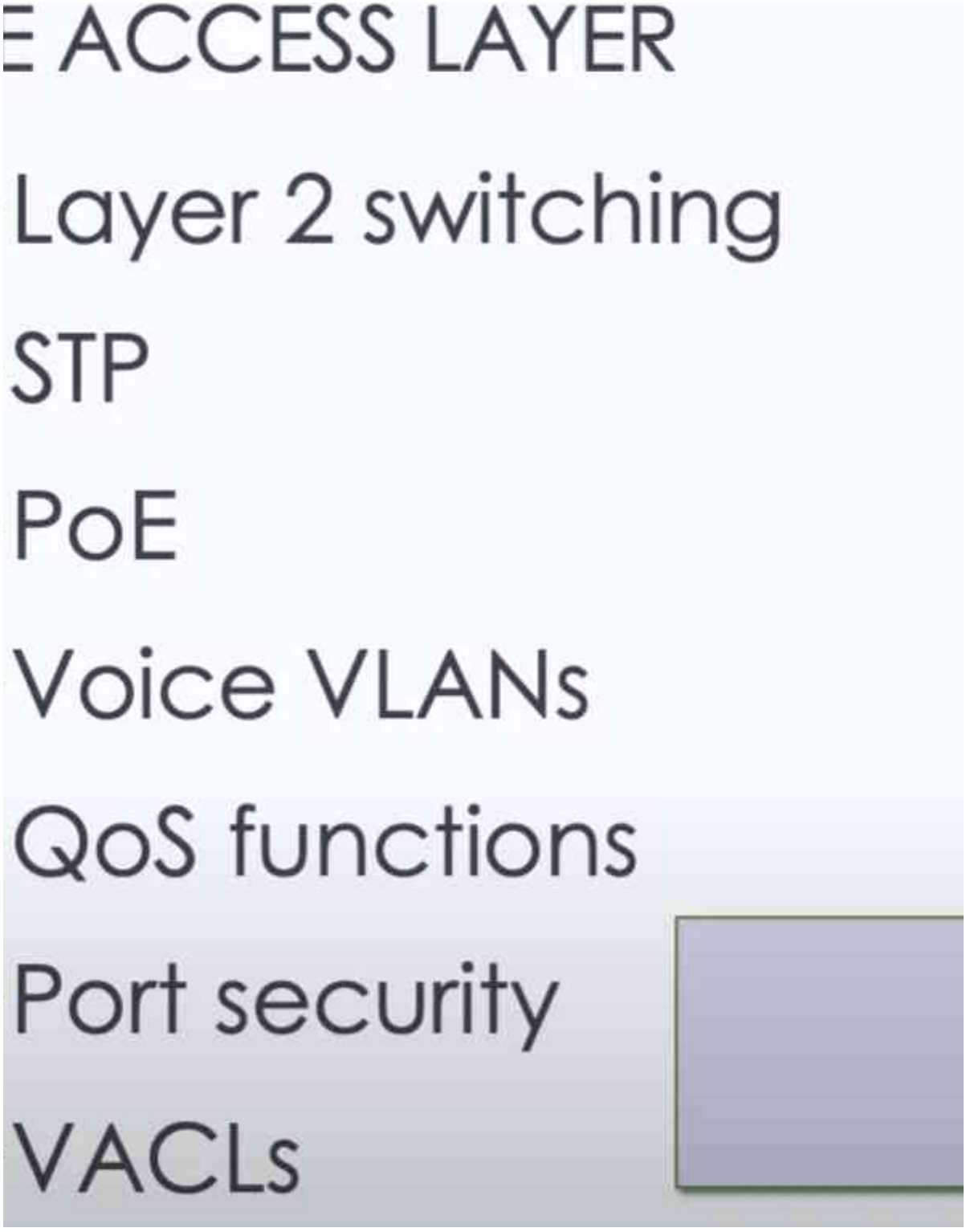

THI

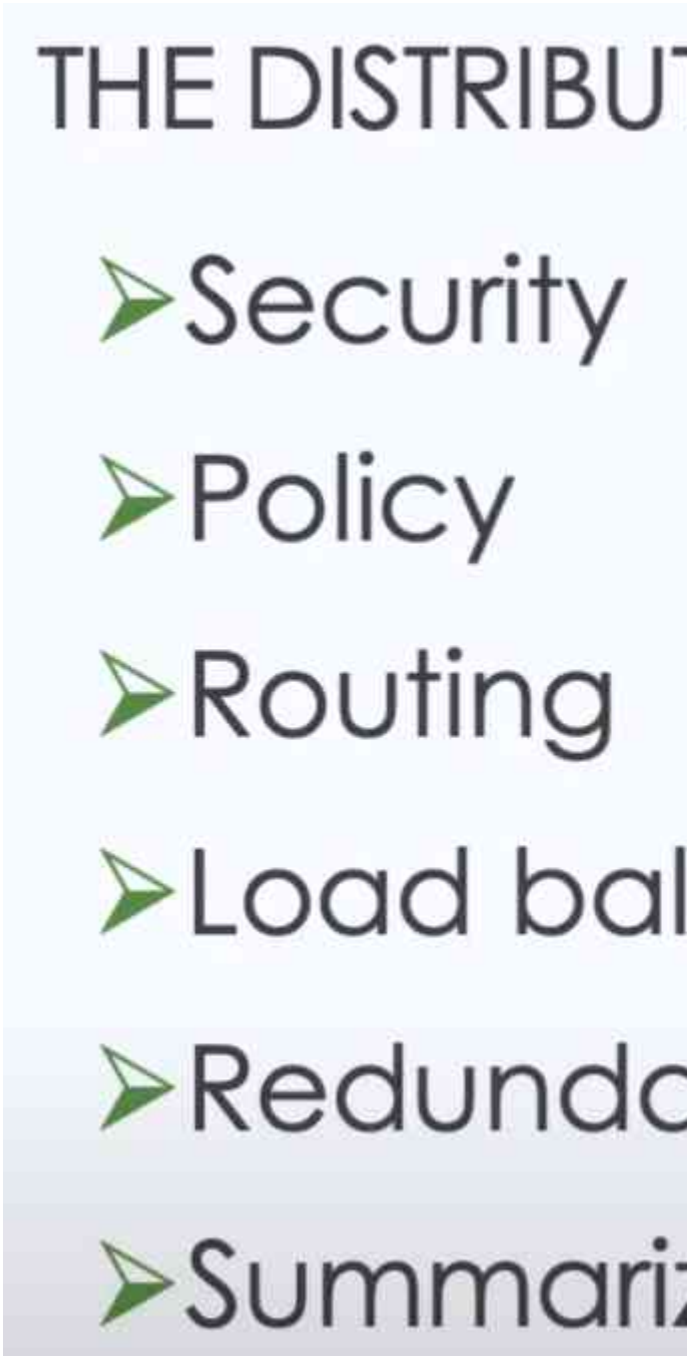

the interface to be half-
lex or auto
the interface to the
rect bandwidth or
ore it to auto
the interface to be full-
lex or auto
off
Auto
Desirable

| | | | |
|---|---|---|---|
| No | No | No | |
| No | No | PAgP | |
| No | PAgP | PAgP | |
| No | No | No | |
| No | No | No | |
| No | No | No | |


Access
Dynamic Auto
X
Trunk
Access
Trunk
Access
Access
Access
Access


CORE MODEL (CLASSI
ore/Distribu
Access

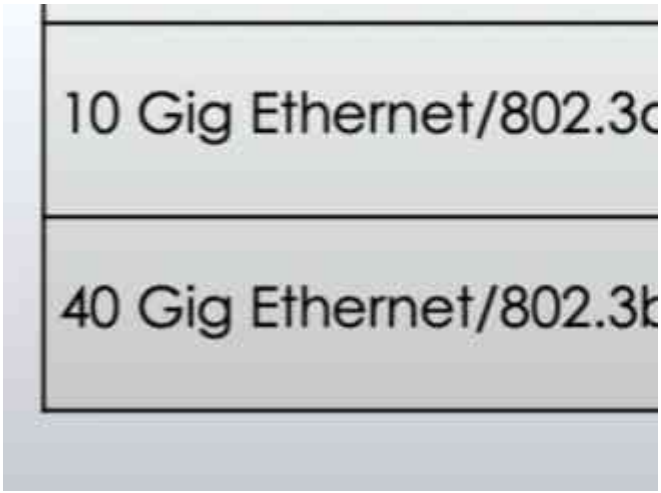

E ACCESS LAYER
Layer 2 switching
STP
PoE
Voice VLANs
QoS functions
Port security
VACLs

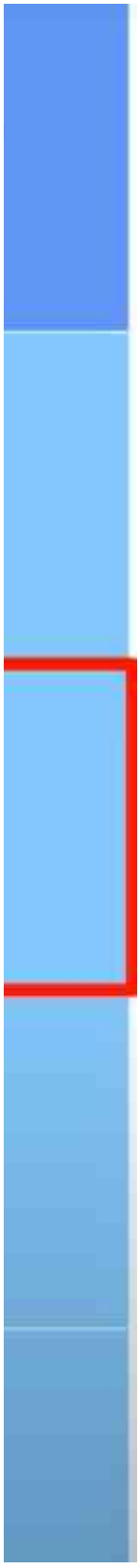



| Active | Passive | On |
|---|---|---|

| | | |
|---|---|---|
| No | No | No |
| No | No | No |
| No | No | No |
| LACP | LACP | No |
| LACP | No | No |
| No | No | ON |

| Name/IEEE |
|---|
| Ethernet/802.3 |
| Fast Ethernet/802.3u |
| Gigabit Ethernet/802.3 |
| Gigabit Ethernet/802.3 |


10 Gig Ethernet/802.3
40 Gig Ethernet/802.3




C 2-TIER)
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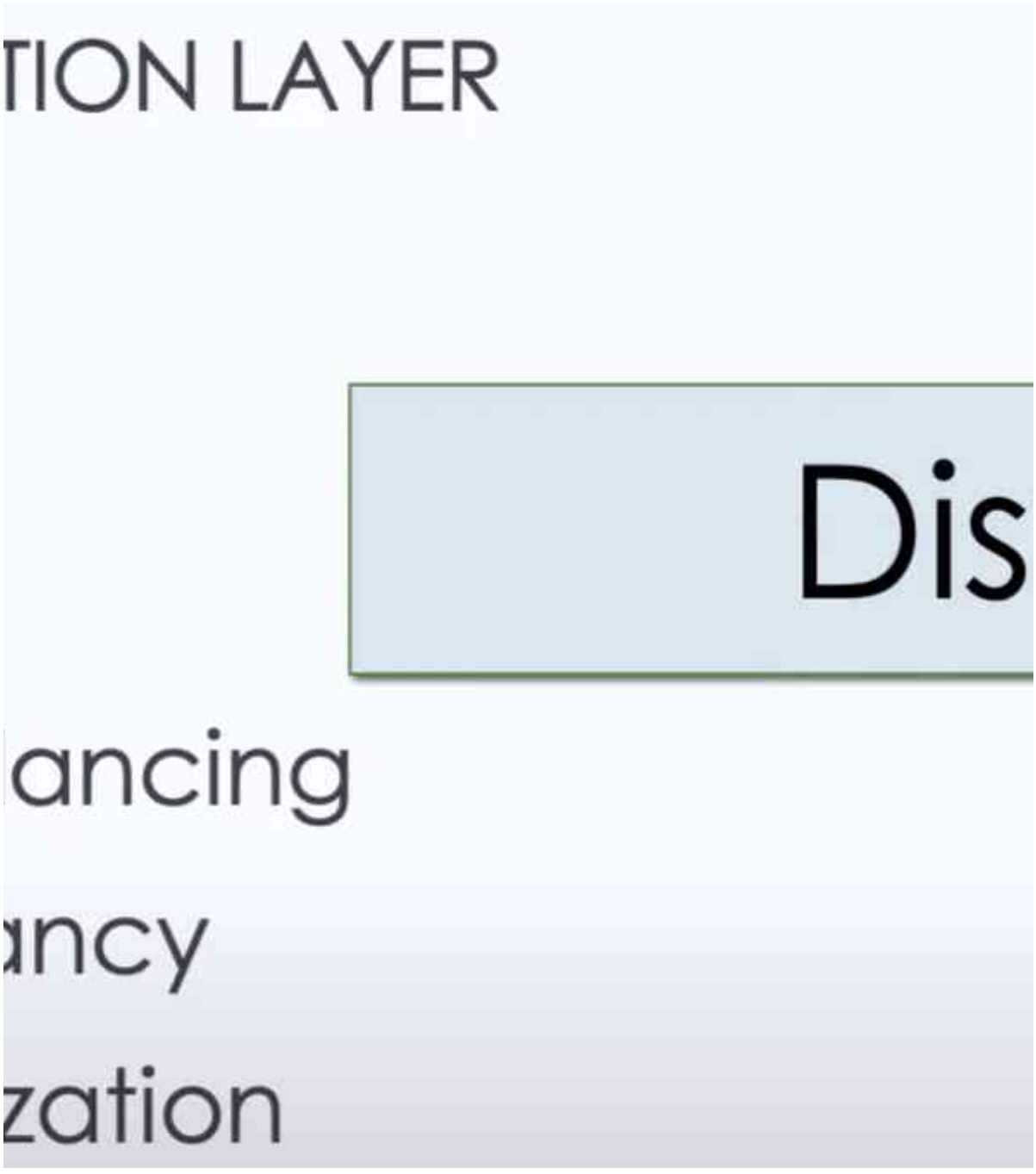
Access


TION LAYER
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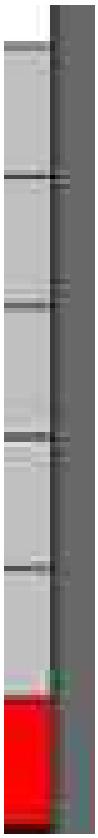
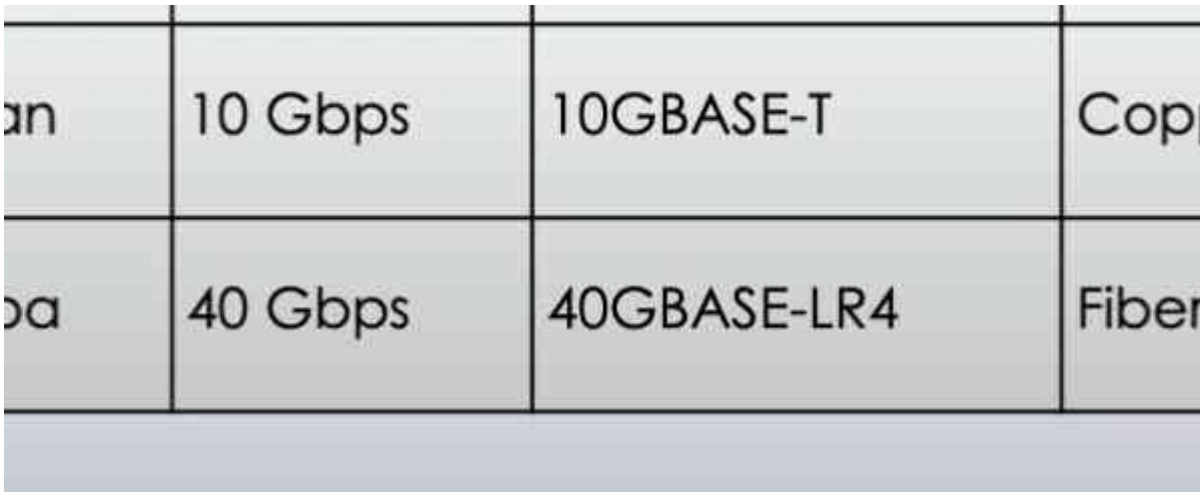


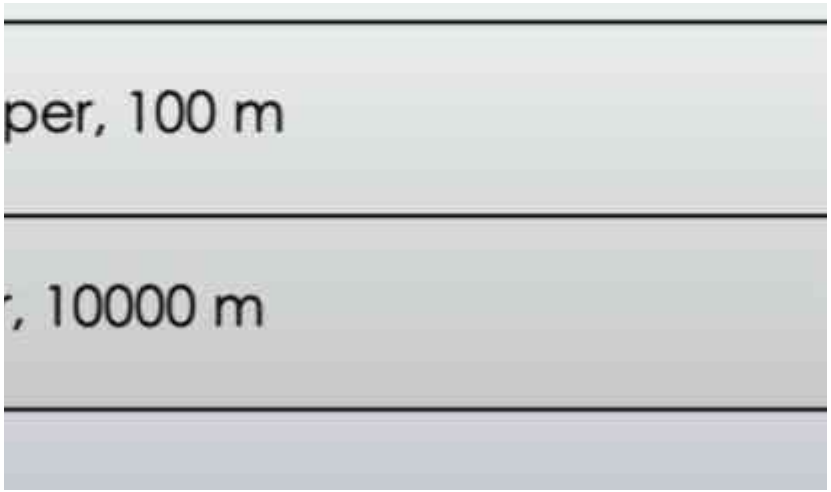
| | Speed | Standard Name | C |
|---|---|---|---|
| | 10 Mbps | 10BASE-T | Cop |
| | 100 Mbps | 100BASE-T | Cop |
| Bz | 1000 Mbps | 1000BASE-LX | Fiber |
| Bab | 1000 Mbps | 1000BASE-T | Cop |



| | | | |
|---|---|---|---|
| an | 10 Gbps | 10GBASE-T | Cop |
| oa | 40 Gbps | 40GBASE-LR4 | Fiber |

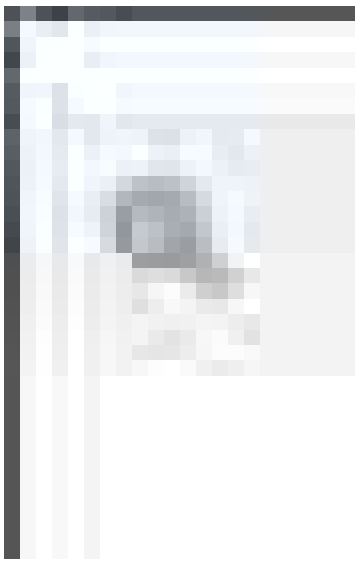

tribution

| Cable Type, Max. Length |
| --- |
| per, 100 m |
| per, 100 m |
| , 5000 m |
| per, 100 m |


per, 100 m
, 10000 m

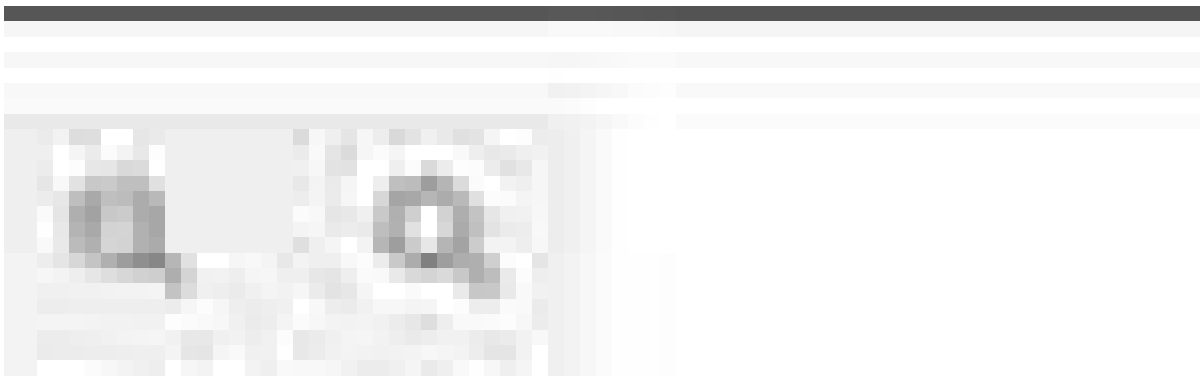

FHRP
Ter

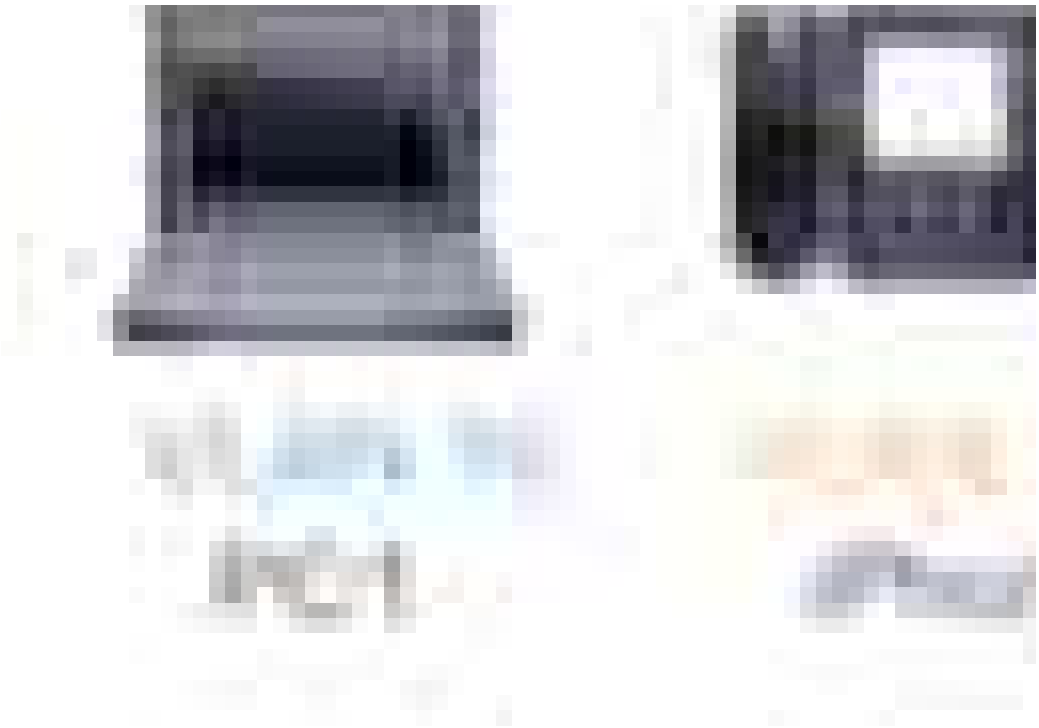

HSRP
Acti
VRRP
Mas
GLBP
A

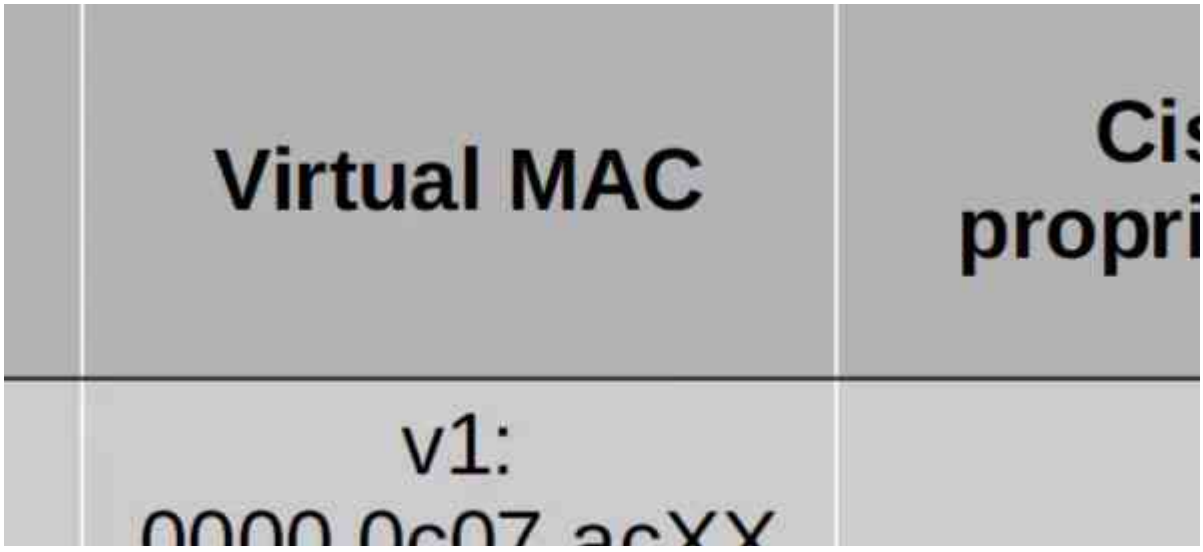


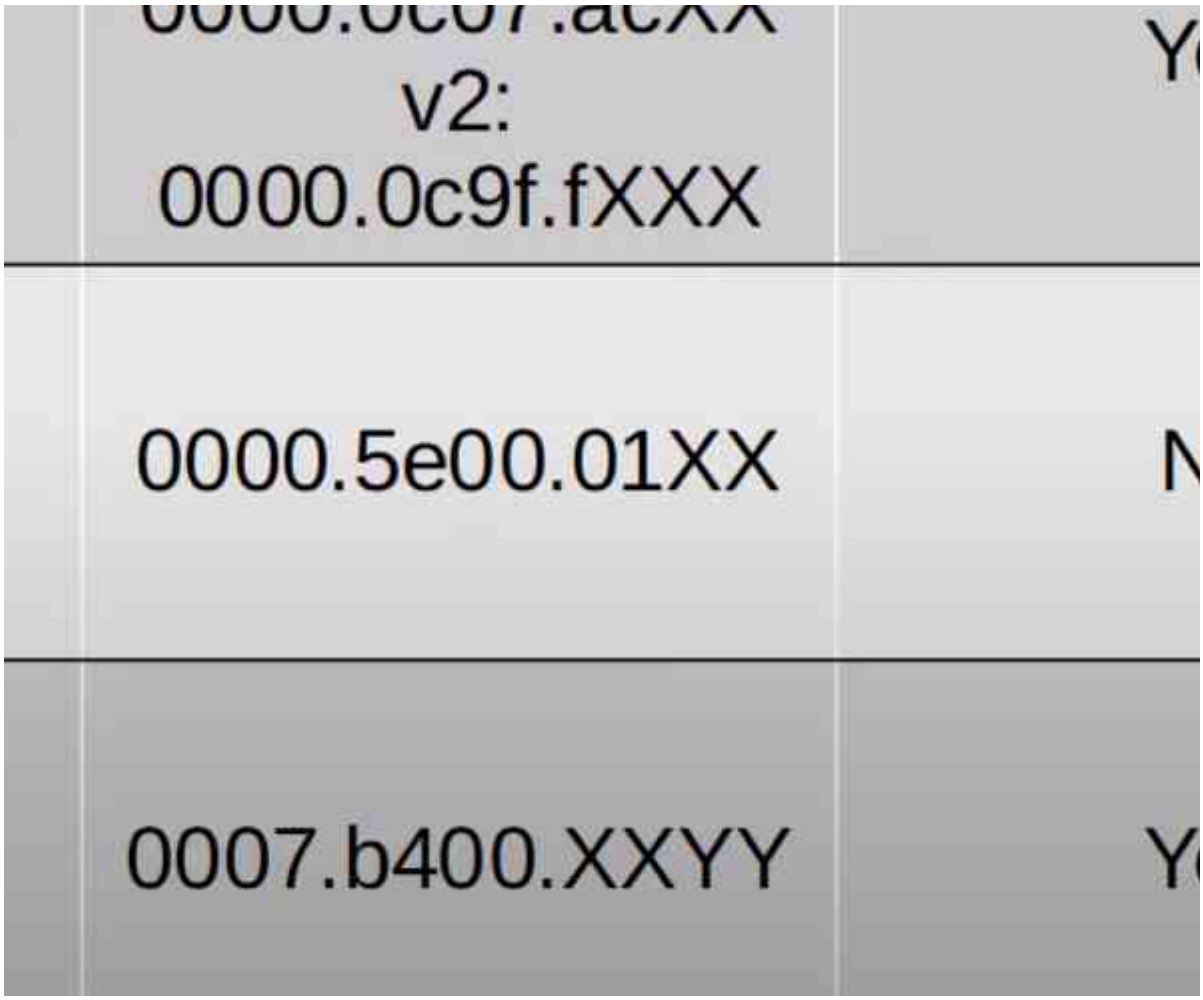

rminology
Multicast IP

| | |
|---|---|
| ve/Standby | v1: 224.0.0.2<br>v2: 224.0.0.102 |
| ster/Backup | 224.0.0.18 |
| VG / AVF | 224.0.0.102 |

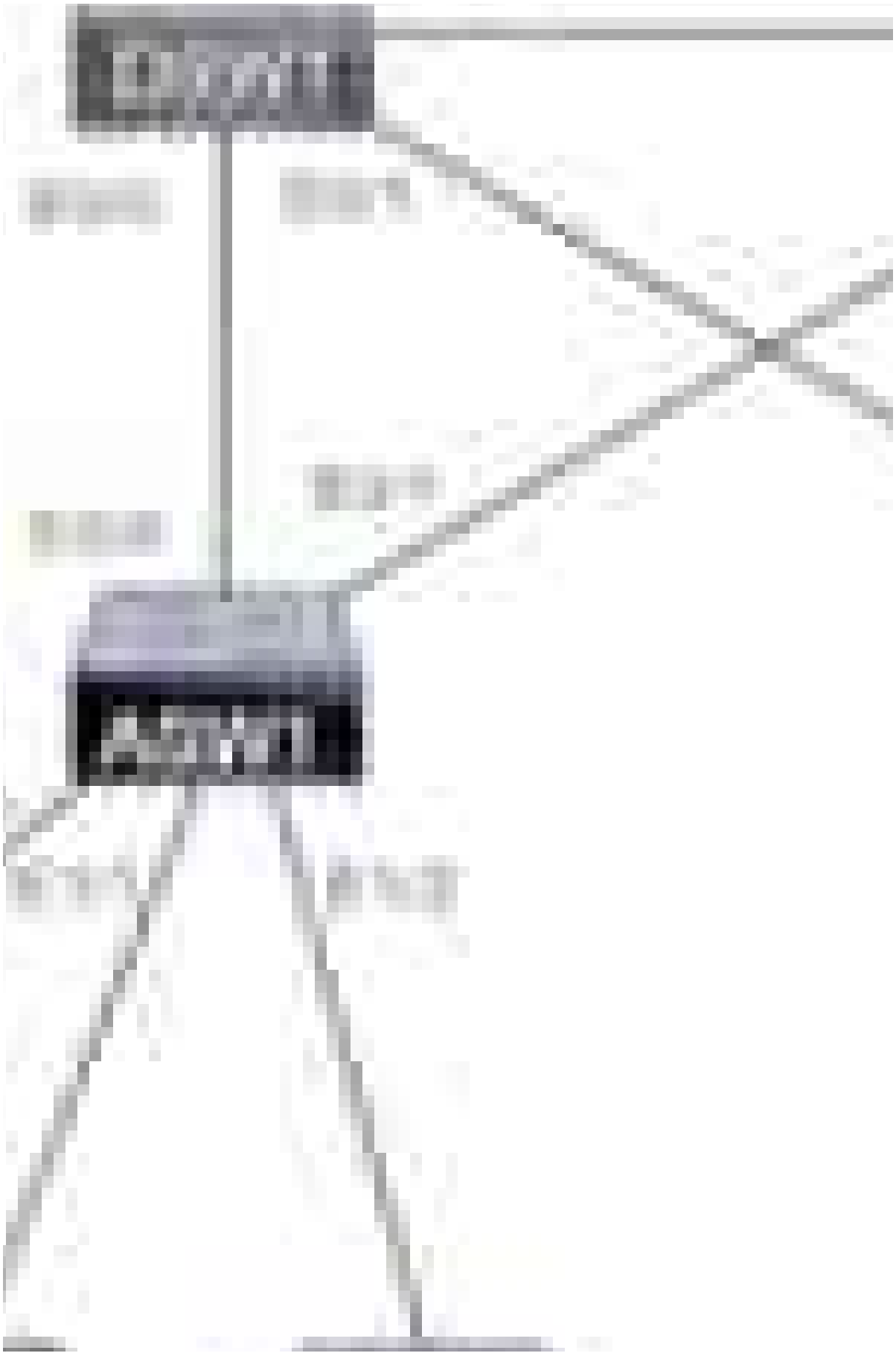


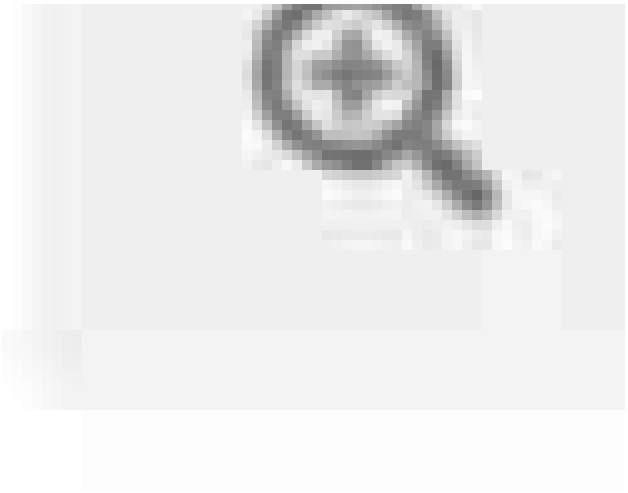


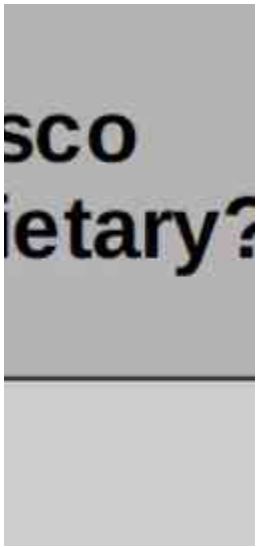

Virtual MAC
Cis
propri
v1:
0000.0c07.acXX


v2:
0000.0c9f.fXXX
0000.5e00.01XX
0007.b400.XXYY


Topology D



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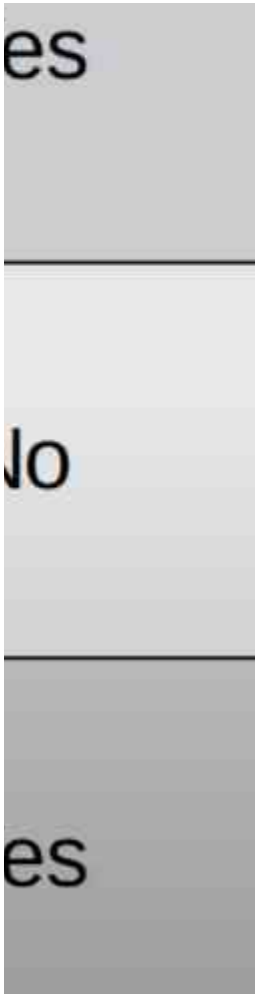
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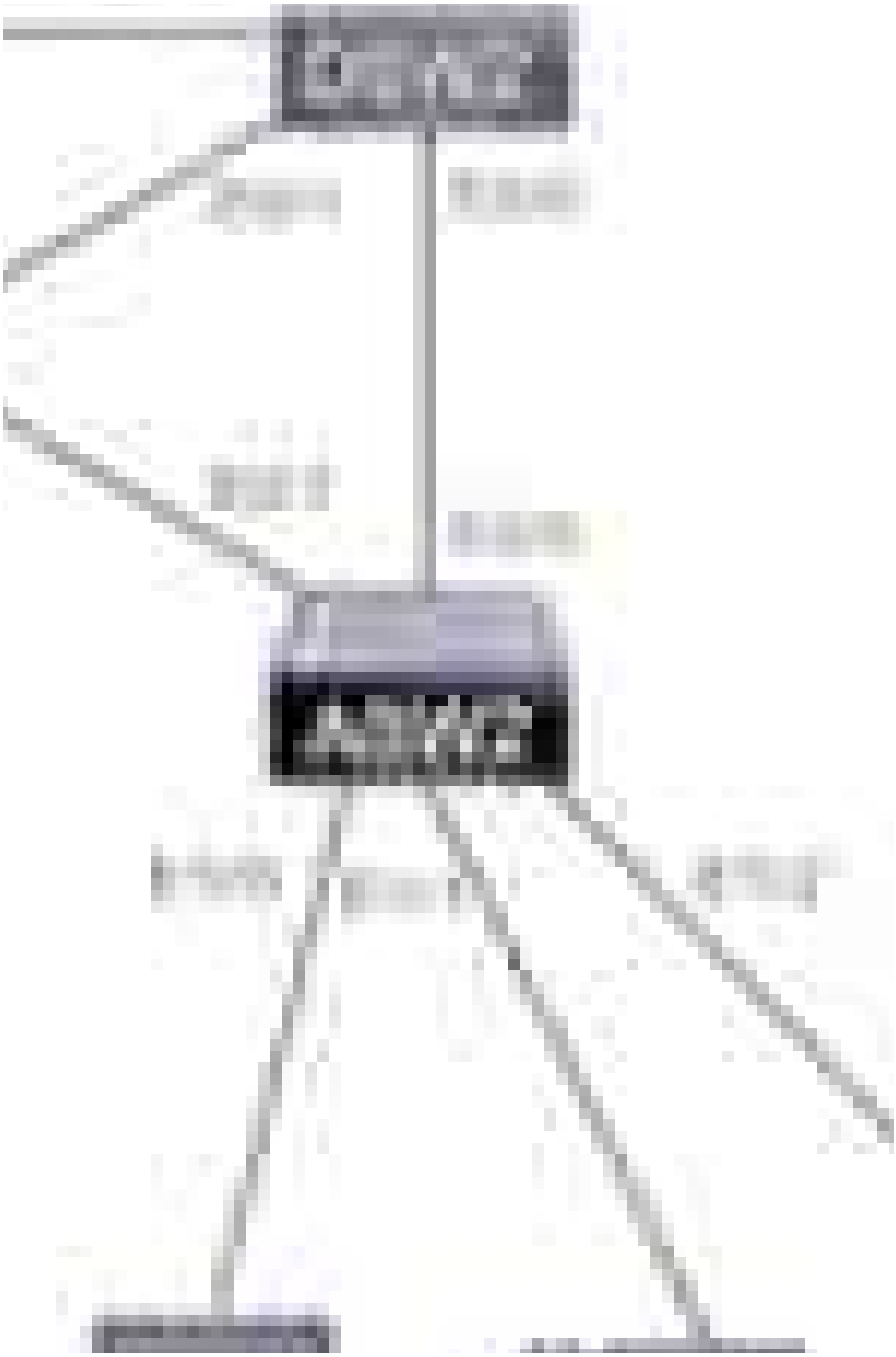

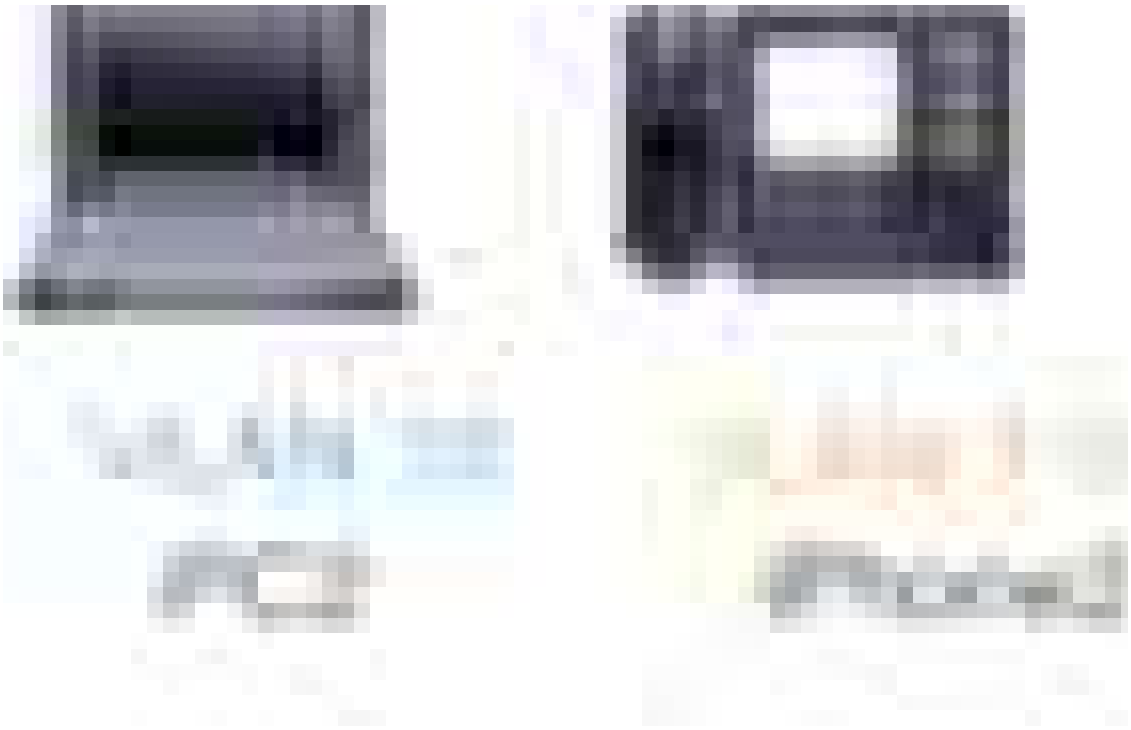

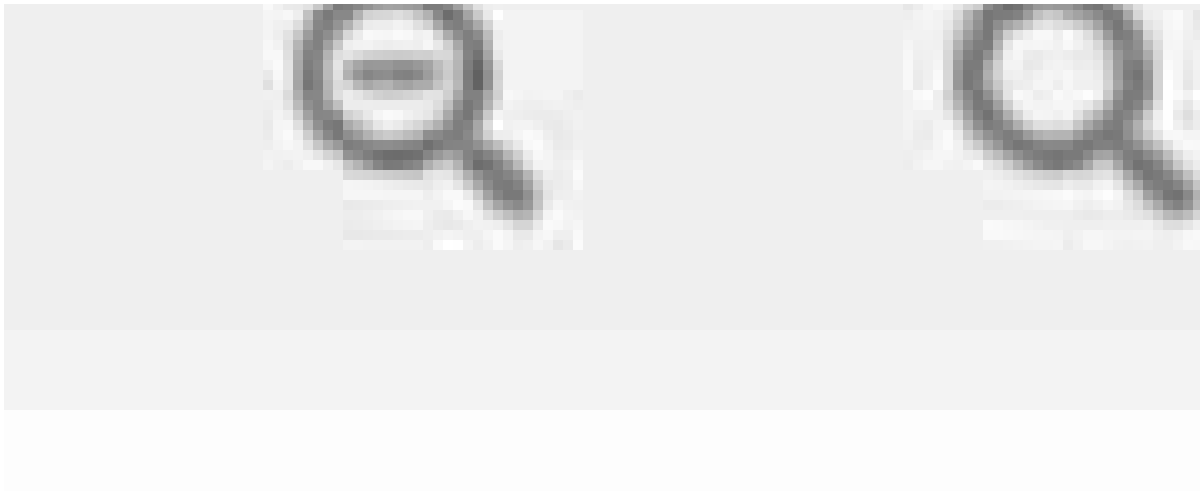


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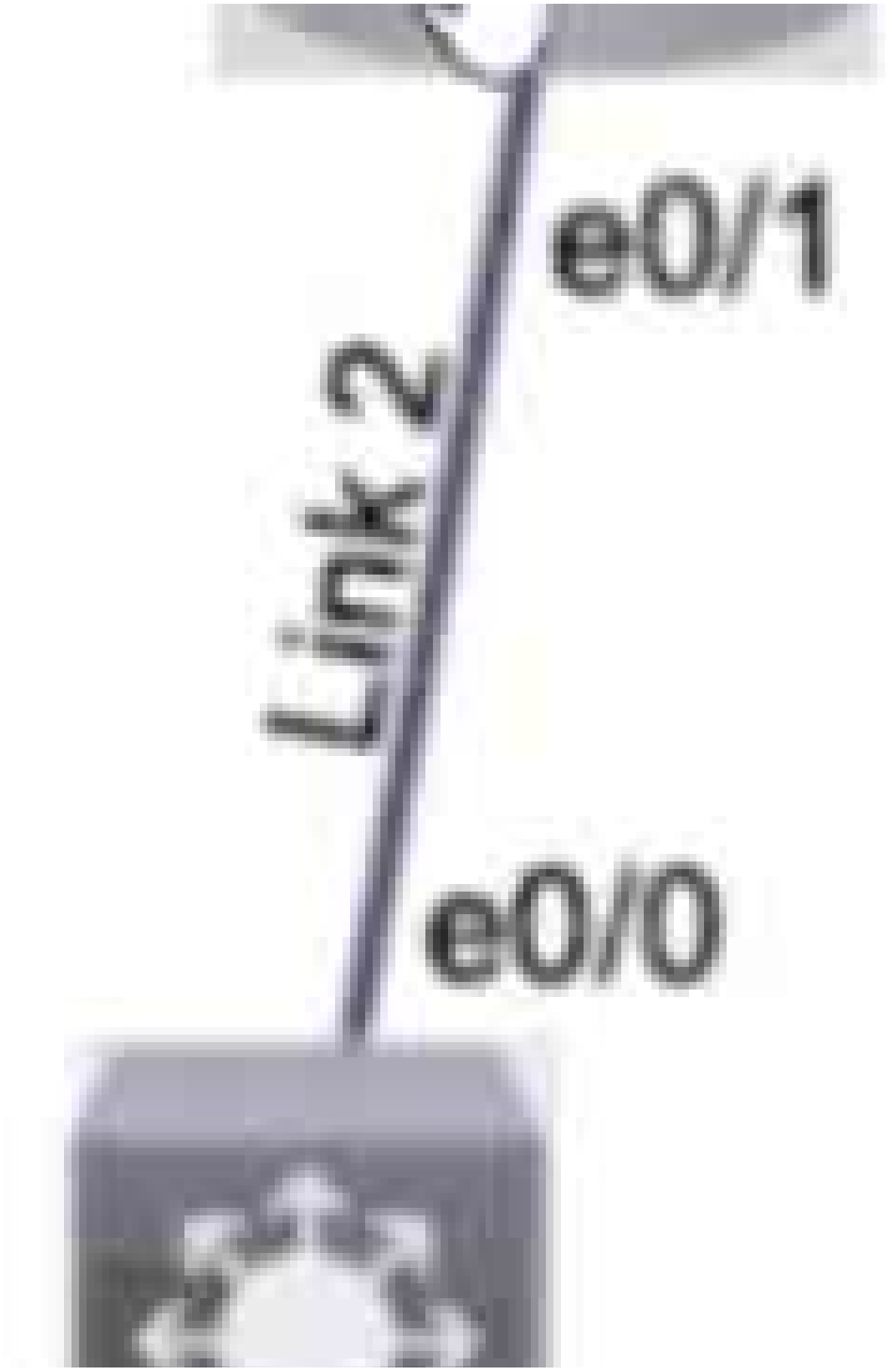
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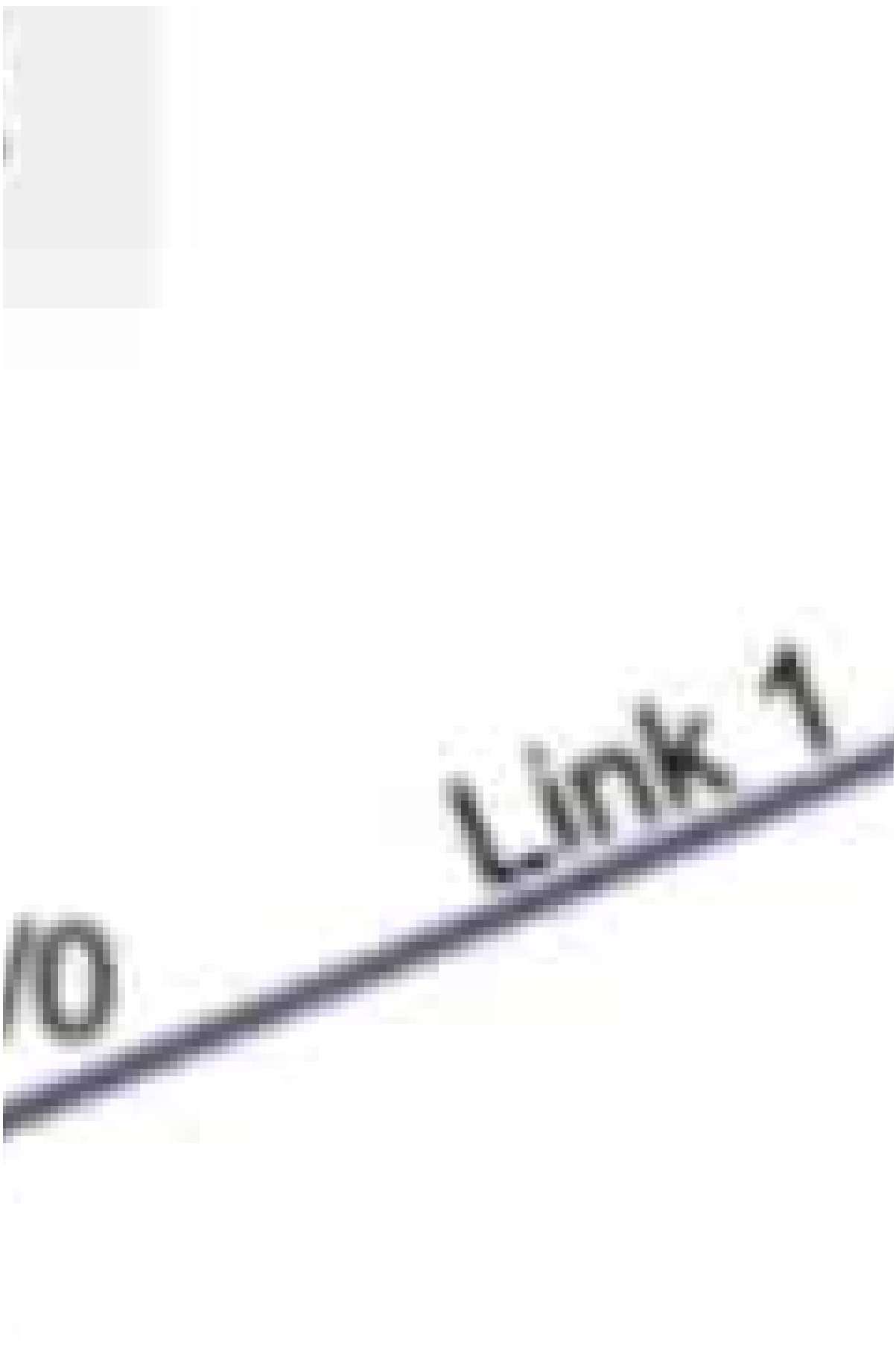
Link 2
e0/0


Sw6


preamble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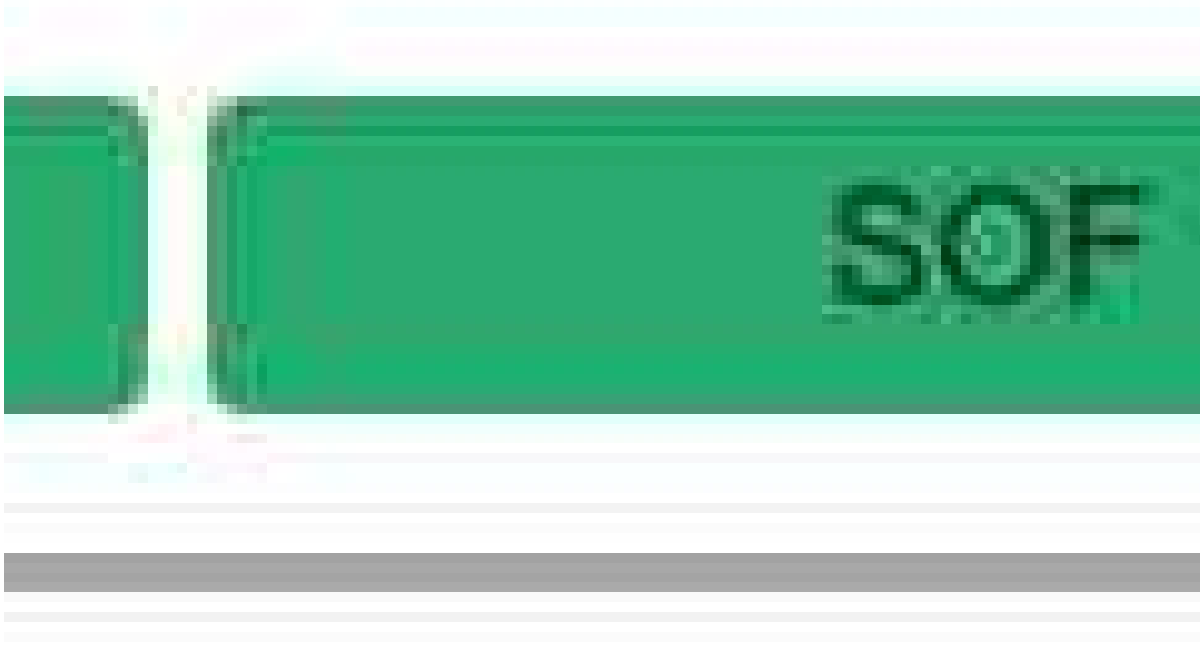
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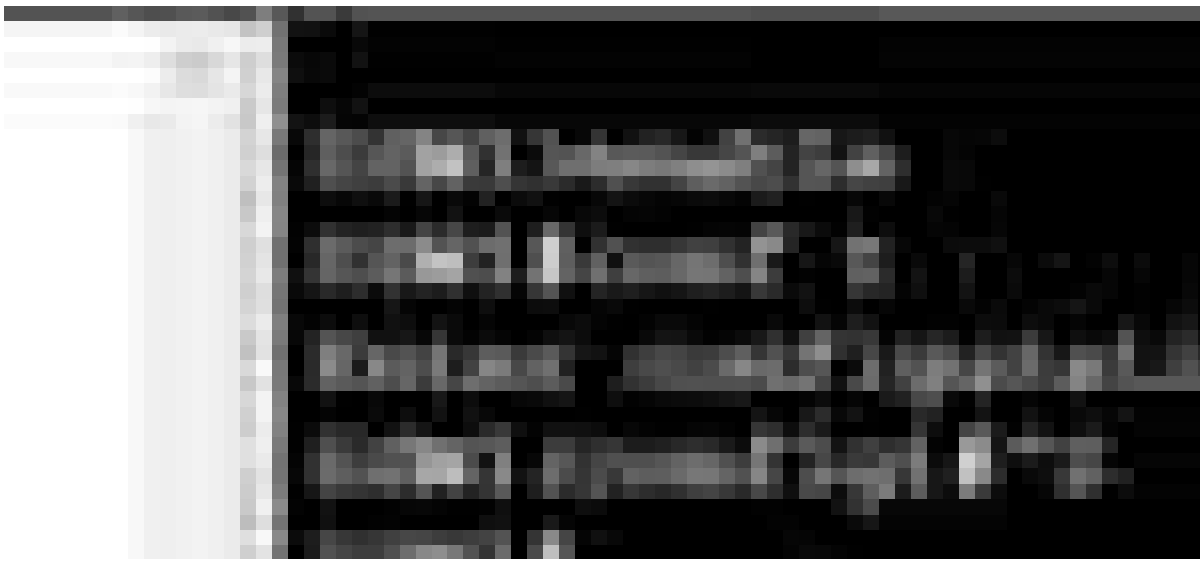

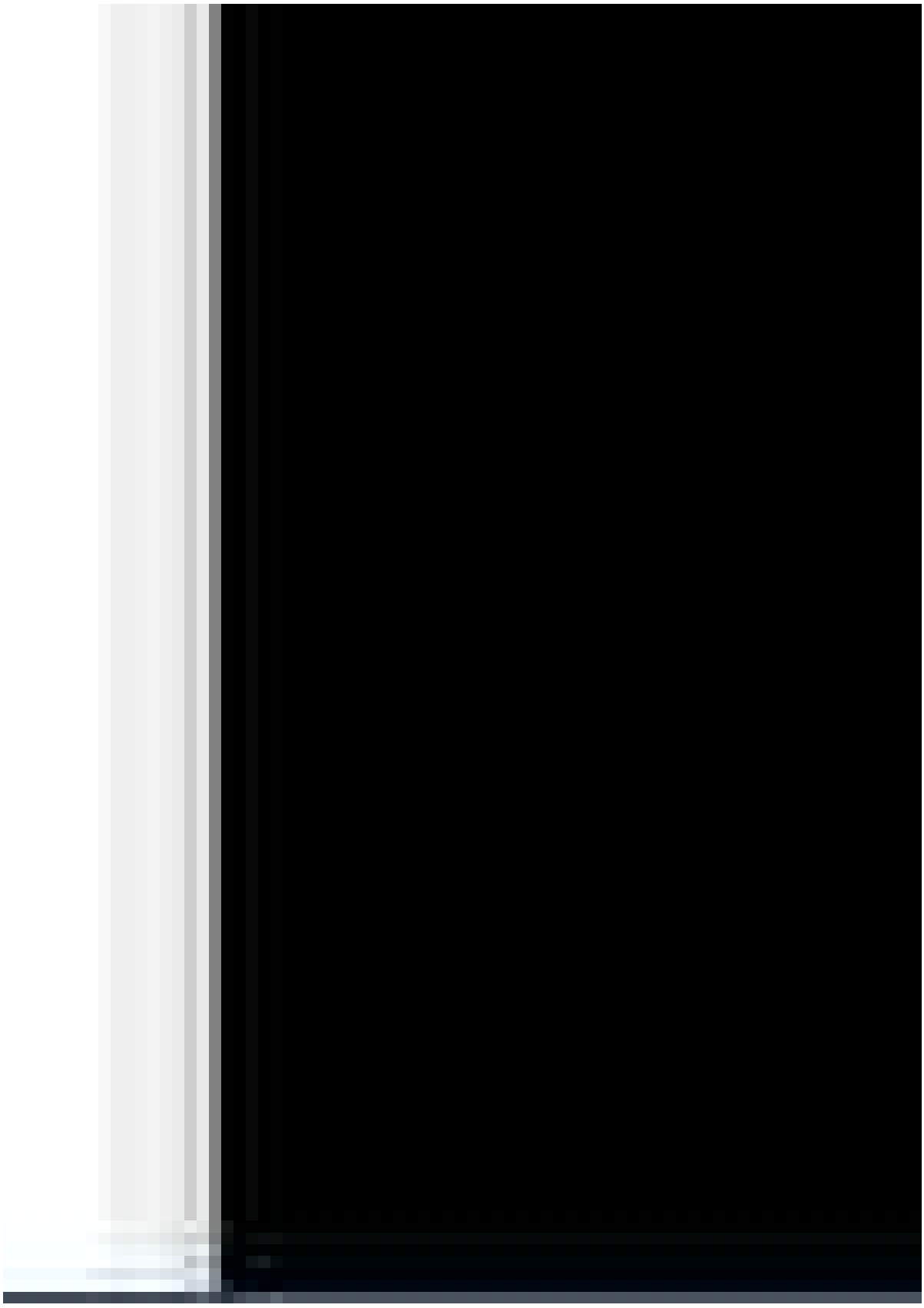

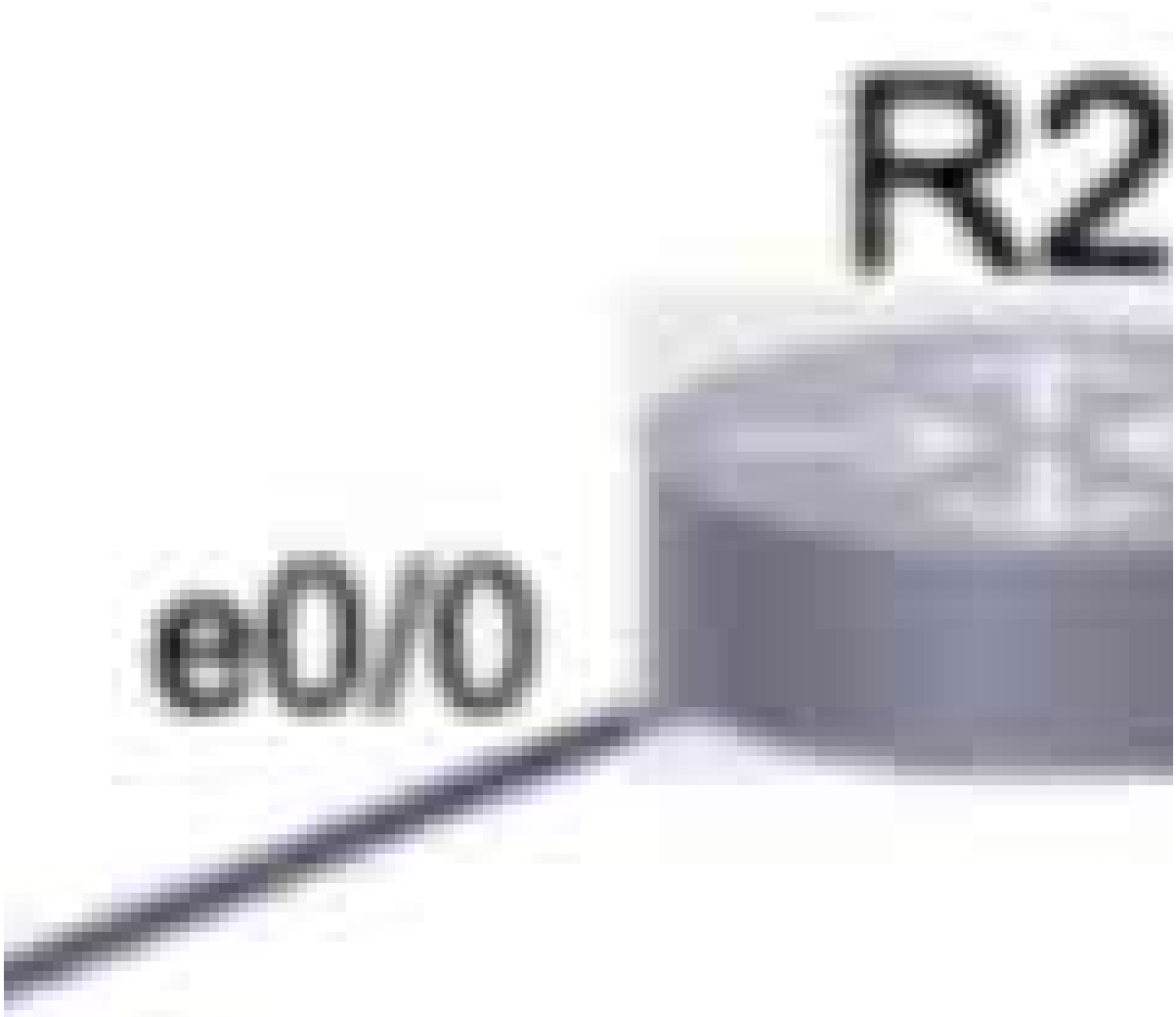
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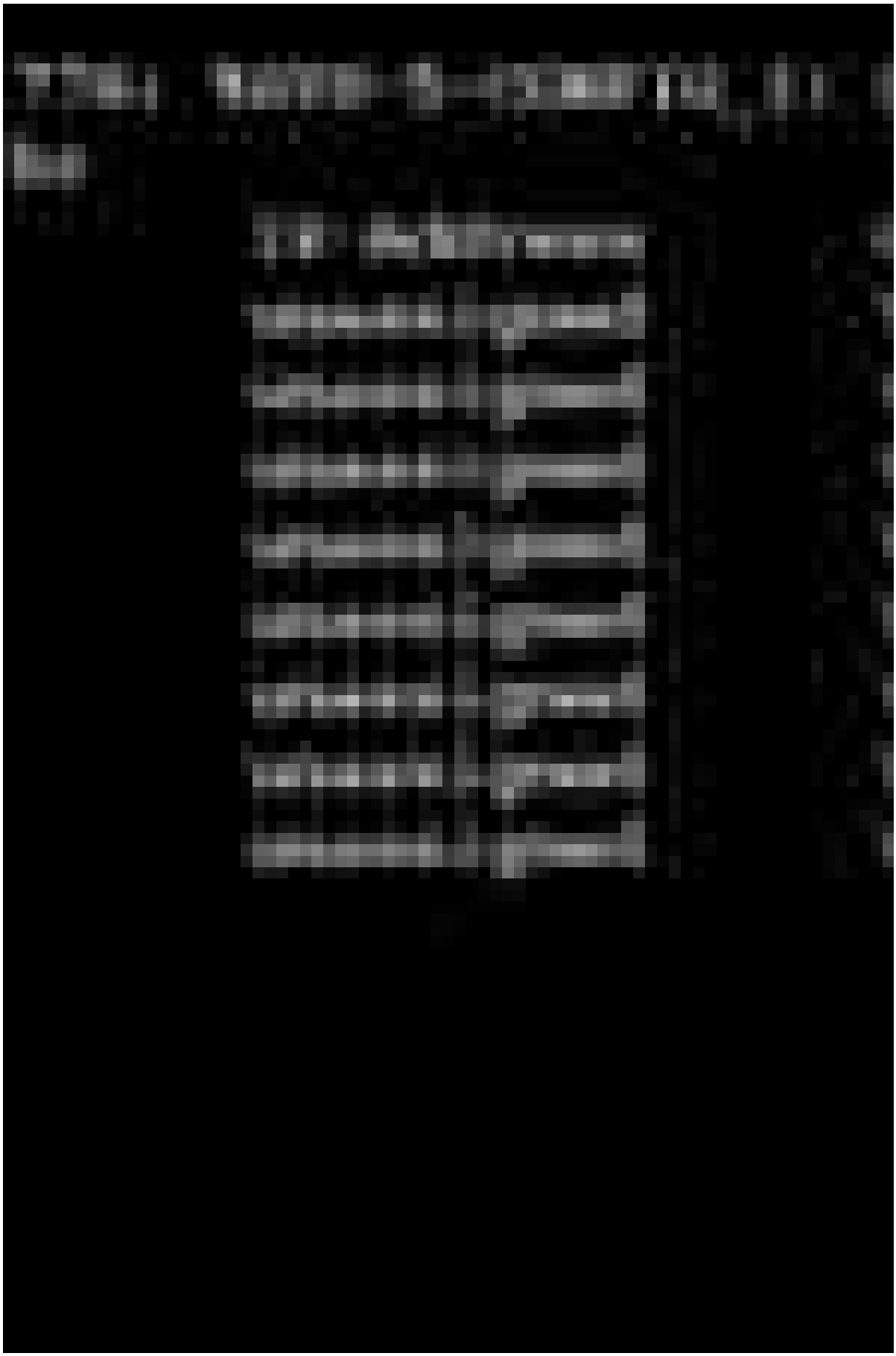

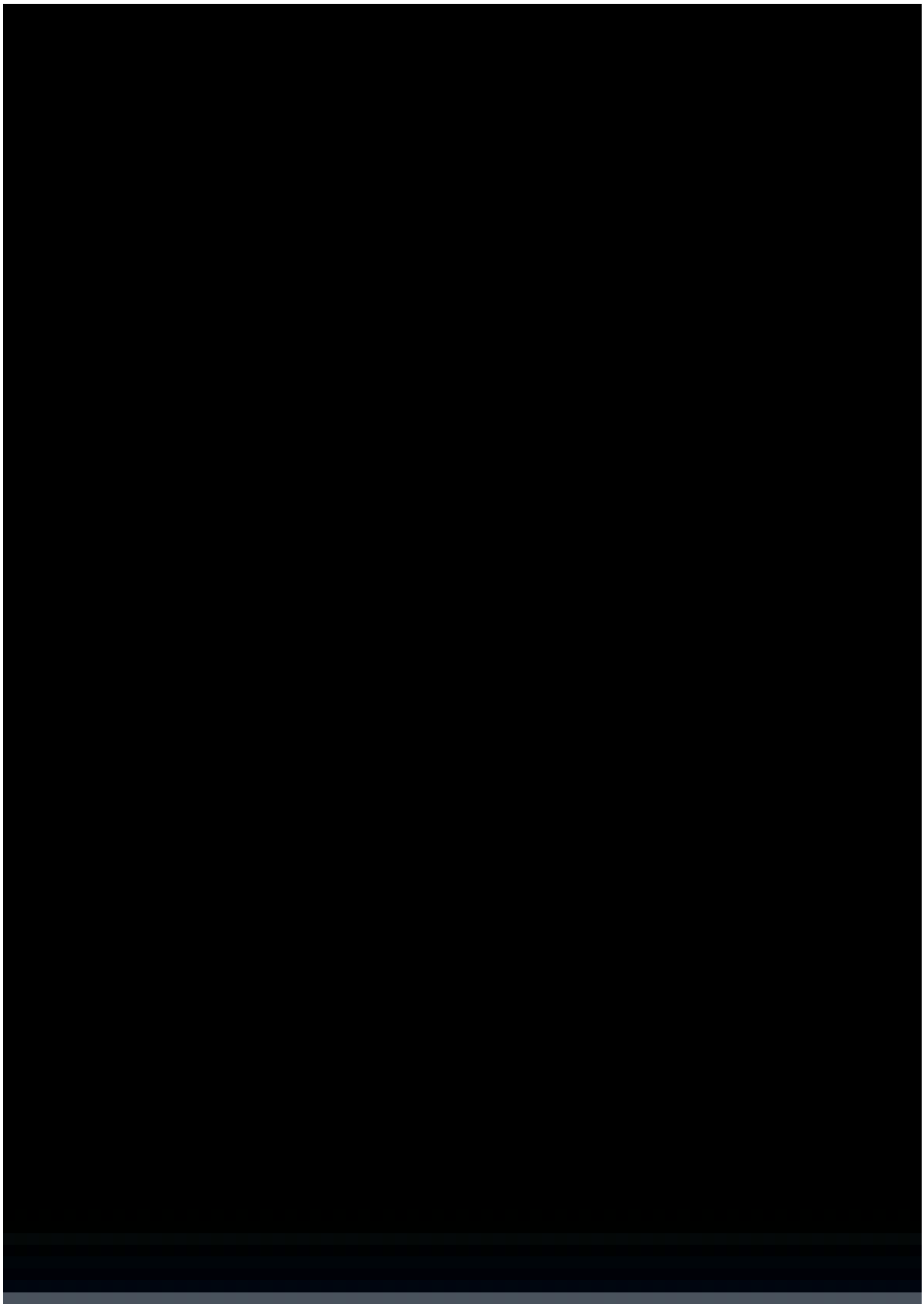


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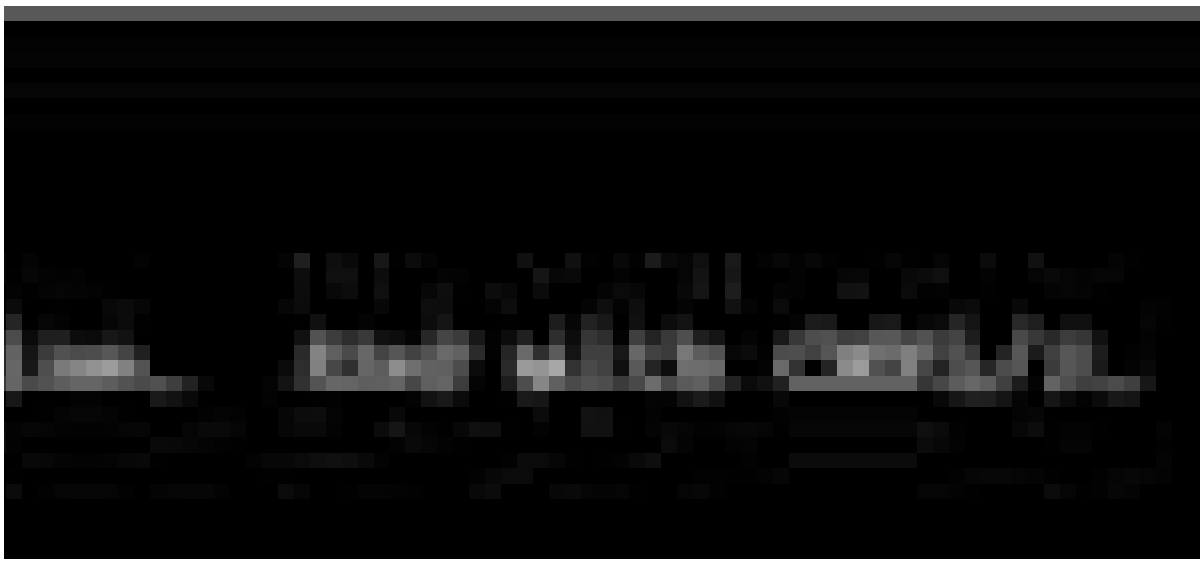

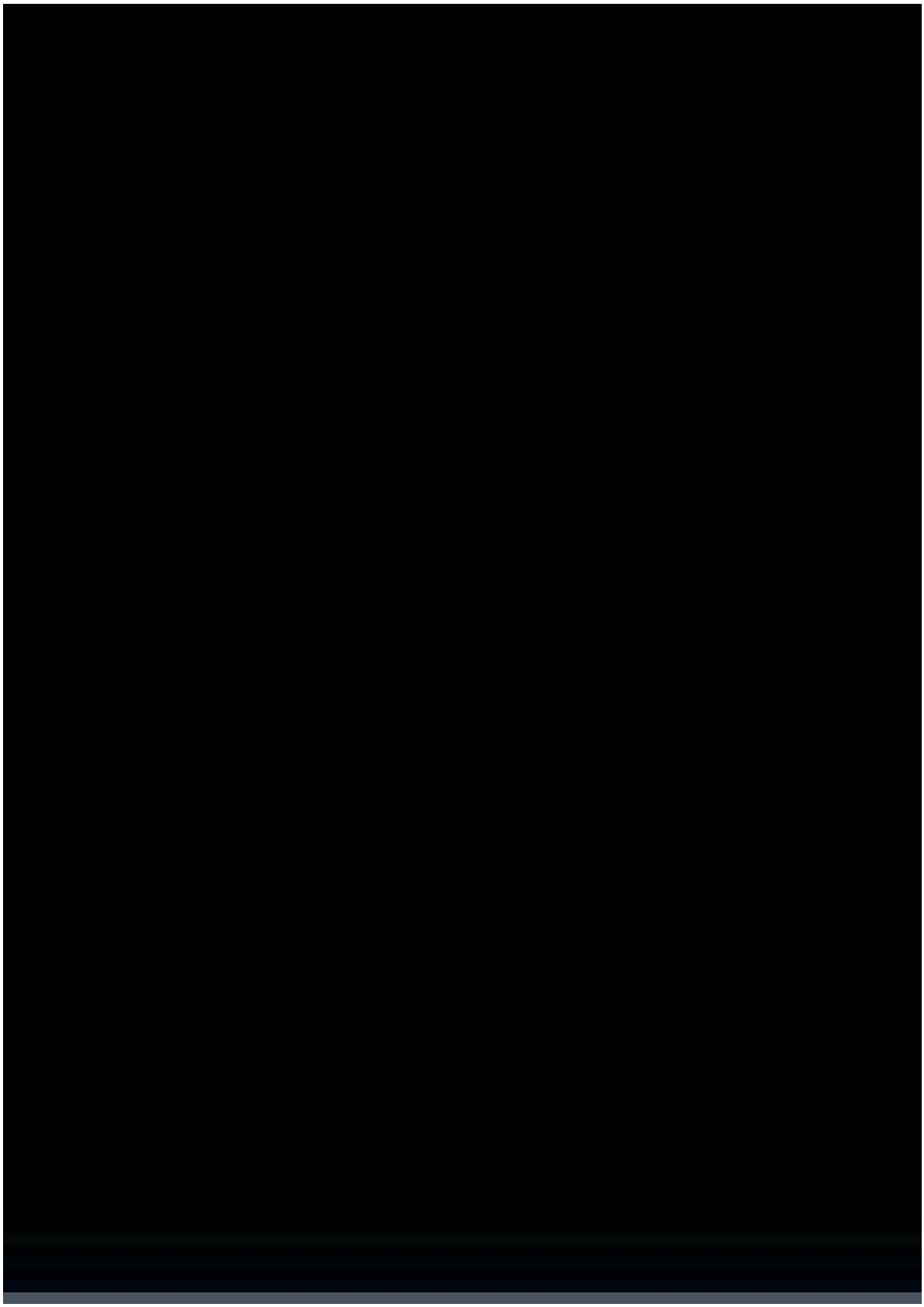


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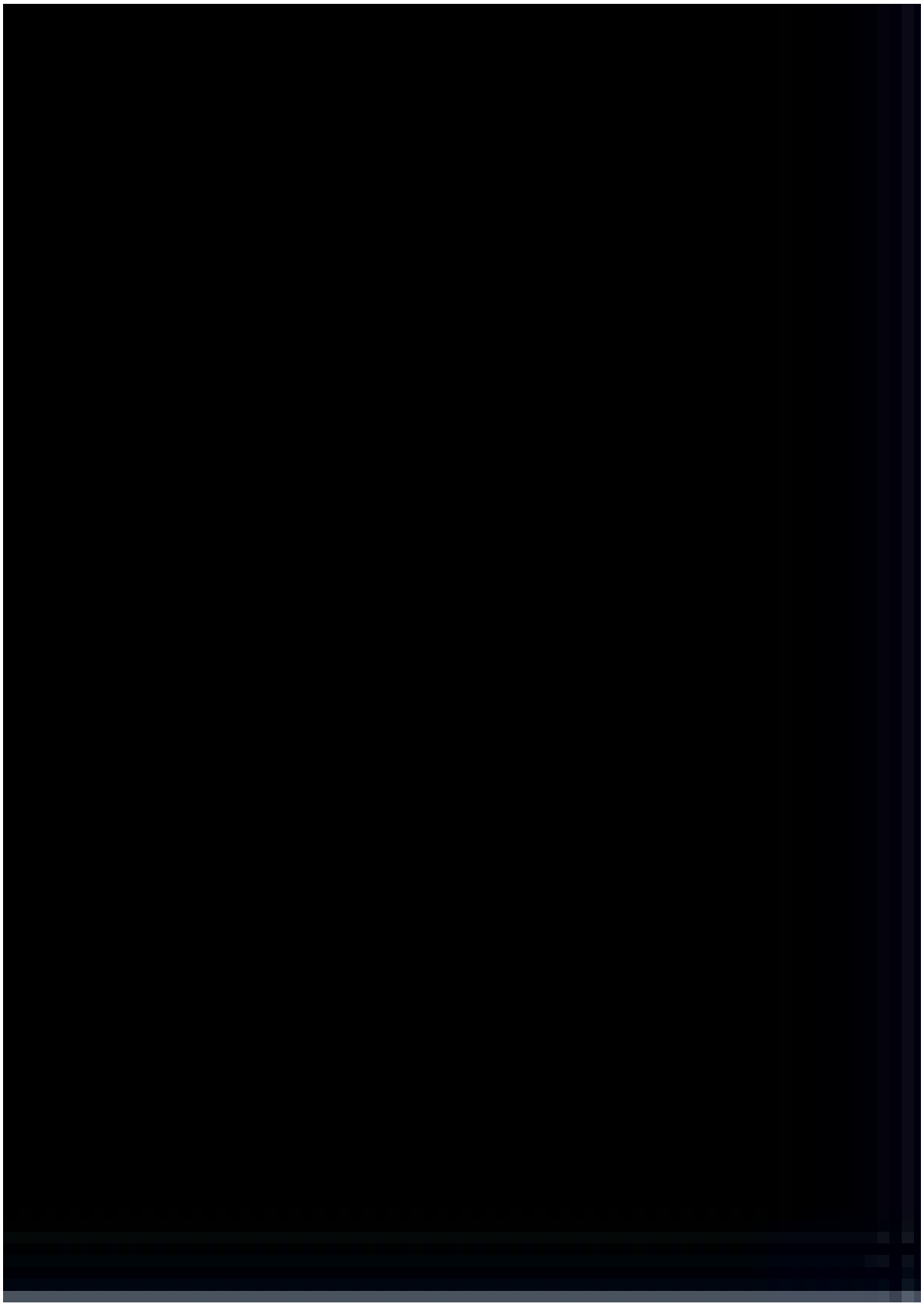
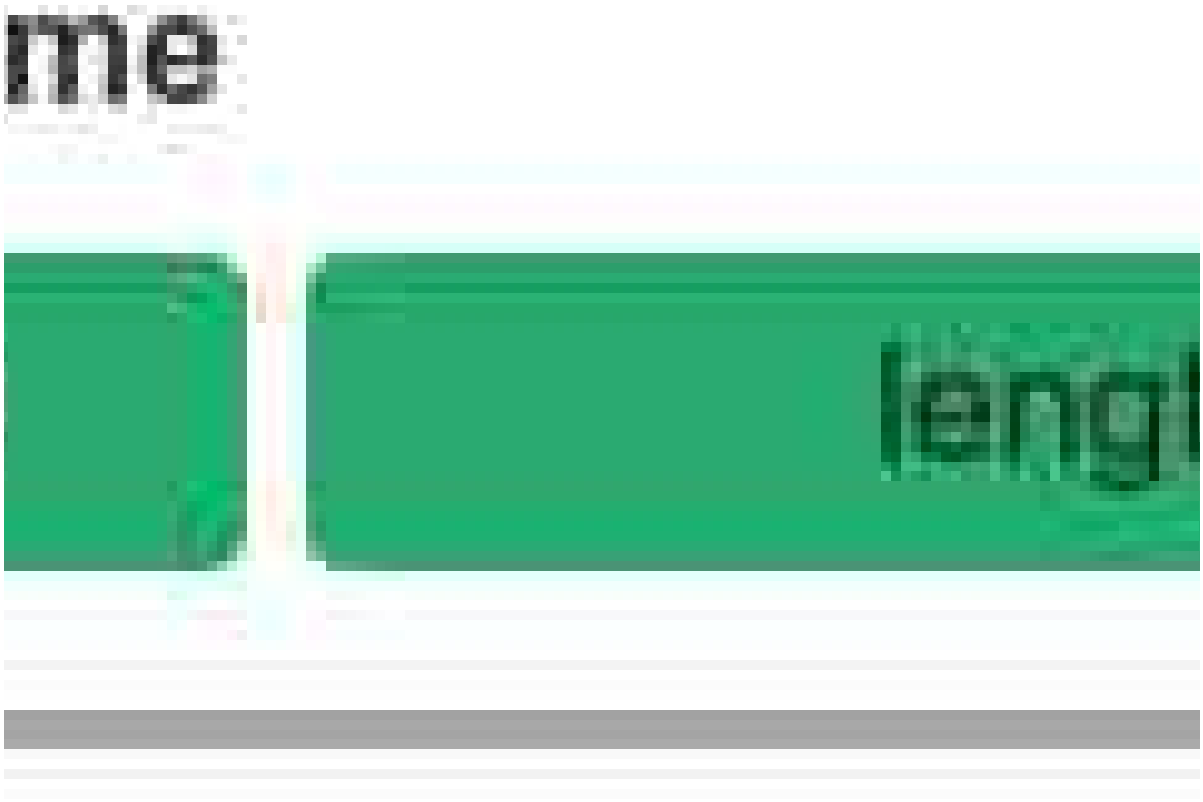
source address




R3


SW7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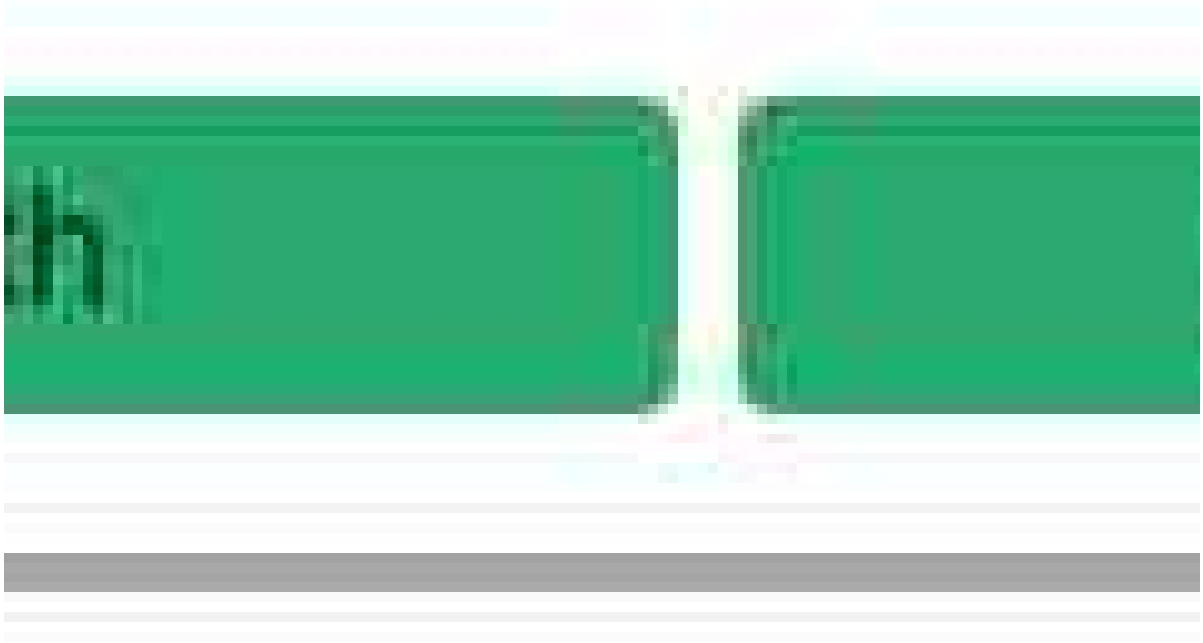

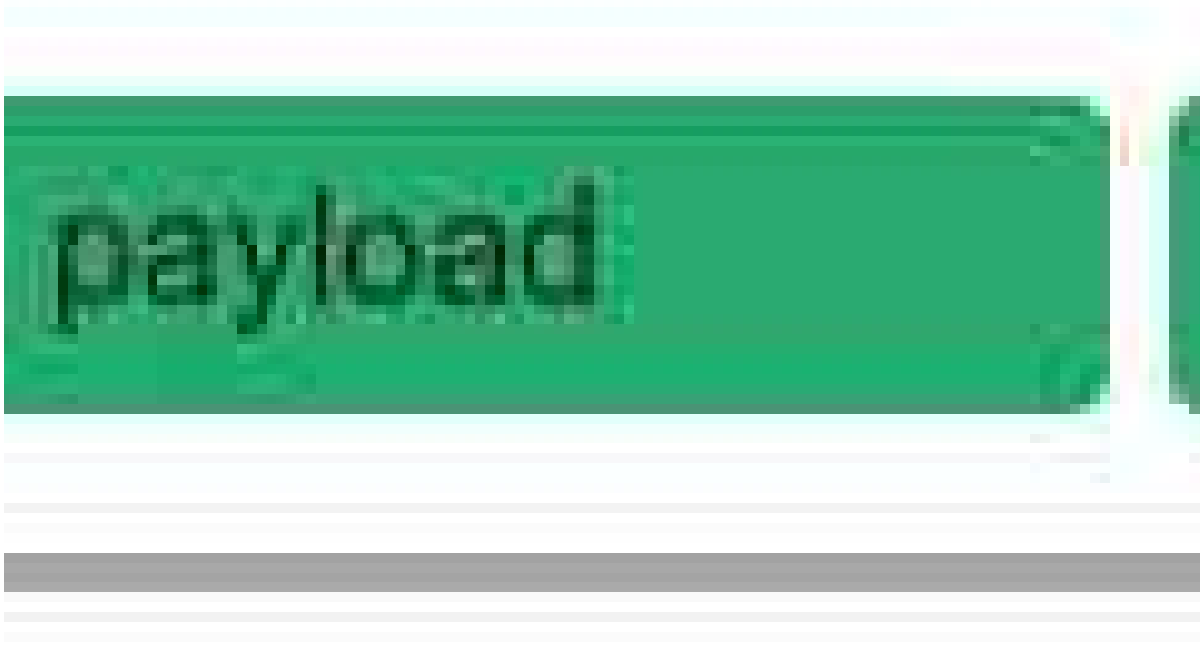
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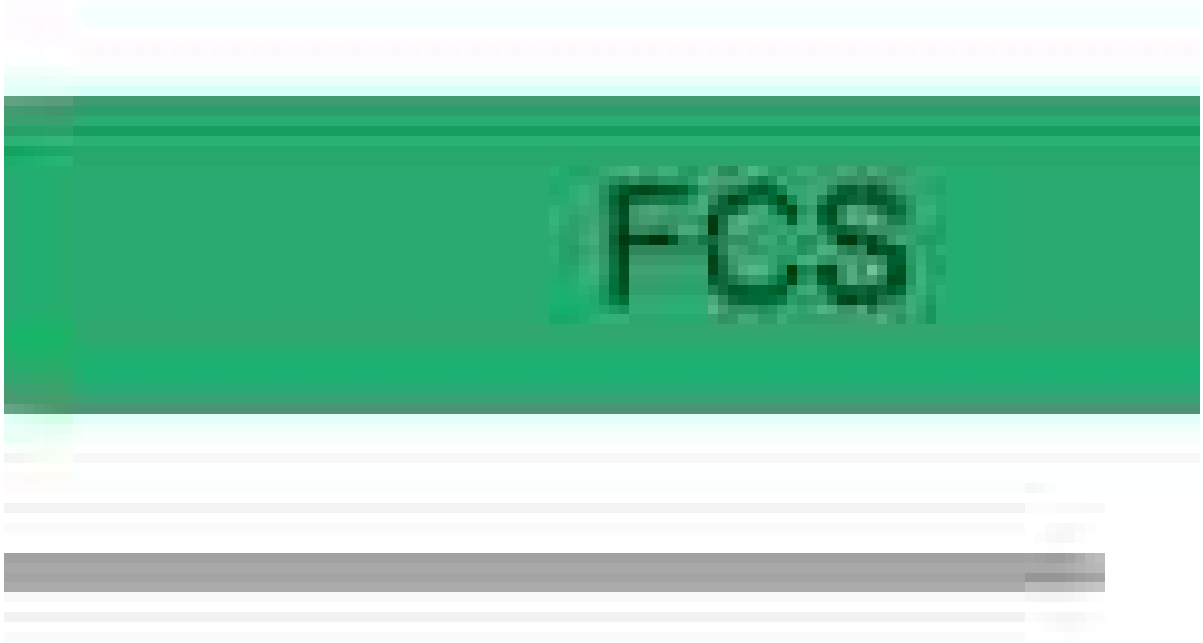
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